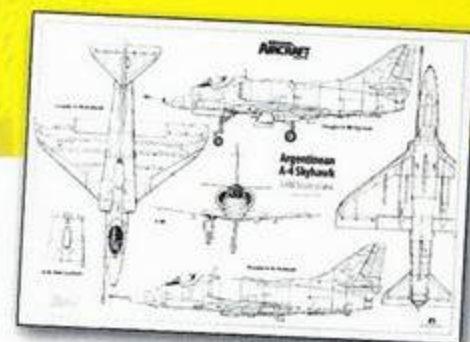


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TSR.2 IN FOCUS



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The late, great, Ray Hannah making a typical low-level pass in MH434 – the subject of Airfix's latest 1/48 scale Spitfire Mk IX kit (Photo: Mike Jerram)

Mid Life Update

Now we're well into our fifth volume of 'MAM', 'the powers that be' decided we needed a bit of a face lift – the magazine that is, not me, ...although...?!? By their very nature, monthly magazines evolve naturally into a regular format and style of their own, invariably led by readership response and suggestions, but every now and again, the opportunity to freshen-up a title has to be taken – without making too many drastic changes. *Why repair it, if it ain't broken!?!?*

'MAM's primary aim will always be to provide you with good quality aircraft modelling articles and historical reference features, including operational service histories, plus camouflage schemes and markings details – and long may it continue to do so.

However, over the last decade or so, the hobby has changed drastically and magazines such as 'MAM' have to live, grow and develop with these changes in mind. When I first started serious modelling, in the early 1960s, just about every young lad, (and a few lasses too), spent their pocket money on buying plastic construction kits.

At that time there was only one dedicated modelling magazine available in the UK, 'Airfix Magazine' – now long gone. By the late 1960s, 'Airfix Magazine's monthly print run was over 100,000, but there again it didn't have any competition other than a couple of modelling columns in 'real aeroplane' magazines. Today's

marketplace is currently almost awash with modelling magazines, and that's without mentioning the numerous modelling sites on the internet – and we're all fighting for your attention, *and we at SAM Publications are prepared to pull out all the stops, to get it!*

Granted, today's youngsters don't automatically spend their pocket money, (or is it 'allowance' now?), on plastic construction kits. Alternative 'entertainments' such as home computer games and 24 hour TV, have replaced polystyrene glue and enamel paint. So, where does that leave our hobby, and perhaps just as importantly, modelling magazines such as 'MAM', in the future?

Well, in some respects, the hobby appears to be in relatively good shape – well it must be if it can support so many dedicated enthusiast publications!

I have always maintained that aviation enthusiasts and aircraft modellers will buy as many publications as there are available – as long as the publication is good enough, and therein lies the rub! The trick, is to fill it with what is going to interest you!

There are definite signs of a continuing regeneration in the hobby – it is certainly not all 'doom and gloom'! We may never get back to the days when kits were sold in their tens of thousands, but I think (hope!), the downward side has plateau'd out now, with the latest offerings from the likes of Airfix, Revell,

Eduard, Hasegawa, Tamiya and Trumpeter enticing a whole new participating

audience into the hobby.

Unfortunately, most youngsters of today haven't even got parents who have experienced 'the joys of modelling' to help and guide them on their first glue and paint stained steps, such was the lure in the late-1970s of increasing TV coverage and the start of the first home computer games. In effect, the hobby missed an entire generation of prospective modellers out!

However, we do seem to be attracting the 'missing generation' back into the wonderful world of modelling now. This is especially noticeable in the 'thirty-something' age group... who also appear to be buying and reading modelling magazines too, bless 'em!

Kit manufacturers also at long last appear to be tailoring their new releases to satisfy a more sophisticated, enthusiast public, whilst no doubt still hoping to attract young new modellers into the hobby. Producing kits that are both accurate and well detailed, yet simple enough for a first-timer to make a good job of, can't be easy, but that's what they need to do if they, and the hobby, is grow again.

There may not be quite as many of us out there as there was in the 1970s, but those of us that are left, and the new modellers that are coming into the hobby, are true enthusiasts, and can still support and nurture a vibrant and successful modelling press – *provided we continue to give you what you want!* **MAM**

Neil Robinson

Editor, 'Model Aircraft Monthly'



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ENYMA GRAPHICS

The Lost Tomorrows of an Eagle



Paul Lucas tells the fascinating story of the TSR.2 based upon surviving material in government files, industry records, Air Ministry Orders, Defence Council Instructions and private hands, and offers some conclusions of what might have been had history taken a slightly different turn...

Part One:
**The best laid plans of the TSR.2
which might have been...**



XR219 at Boscombe Down prior to its first flight in September 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)

It is now some 40 years since the then Chancellor of the Exchequer, James Callaghan, stood in the House of Commons and as part of his Budget speech of 6 April 1965 announced the cancellation of what is arguably the most controversial aeroplane ever built in Britain, the British Aircraft Corporation's Tactical Strike and Reconnaissance 2 (TSR.2).

Since then, the political and technical history of the aircraft has been hashed over at some length in a large number of books and magazine articles. What would never appear to have been done in any detail however is to examine what the RAF wanted the aircraft for and suggest how it might have been deployed along with what weapons it might have carried and how it might have appeared had it actually entered service.

Despite the instructions to destroy everything which were given following the project's cancellation, a large amount of material survived in government files, industry records and private hands, some of which has been used as a basis for this series of articles. Although what follows might at times have the appearance of a counterfactual (or 'what if') account, all the documents referred to actually exist. The plans referred to here really were drawn up and the weapons systems which will be discussed in future articles, were actually proposed, no matter how unlikely they may seem.

The colour scheme drawings are likewise based on Primary Sources, such as the surviving prototype aircraft, the preliminary BAC Camouflage Scheme Drawing of November 1964 and on the relevant Air Ministry Orders and Defence Council Instructions of the period. Where either the narrative or illustrations venture from established fact, this be made quite apparent to the reader.

An Operational Requirement

The background story to the origins of the TSR.2 as a Canberra replacement to General Operational Requirement 339 of March 1957 is comparatively well known. So is the story of how the government used the project to facilitate a 'shotgun wedding' of the then extant multitude of British aircraft manufacturing companies which ultimately emerged as two separate groups, Hawker Siddeley Aviation (HSA) and the British Aircraft Corporation (BAC).

Suffice to say, Operational Requirement 343 'Tactical Strike/Reconnaissance Aircraft' of May 1959, was written around the submissions to GOR 339 made by English Electric and Vickers Armstrongs. It was the Air Staff's primary intention with OR 343 to exploit to the full, a combination of high speed and low level flying, to gain all possible advantage from the difficulties which an enemy would face in mounting an effective defence against such a threat. The operational flexibility of such an aircraft would be greatly enhanced if it were to be capable of Mach 2 at medium altitude. This is thought to have given rise to the acronym 'TSR.2'

It would seem that the possibility of using variable geometry for OR 343 was considered by both the Air Ministry and Ministry of Supply,

but was not considered to be a practical proposition by the aircraft manufacturers at that time because a great deal of research would be necessary before any theoretical advantages of such an arrangement could be confirmed.

Defence Policy

During this period it was assumed that the defence policy of the UK would be based on the principle of deterrence of war in all its forms and OR 343 stated that by 1965, the RAF would require a new aircraft to carry out tactical strike and reconnaissance operations, using both nuclear and conventional weapons, enabling the RAF to continue to provide tactical support for the Army, to make an effective contribution to the North Atlantic Treaty Organisation (NATO), Supreme Allied Commander Europe (SACUR)'s forces and Britain's other regional pacts such as Central Treaty Organisation (CENTO) and South East Asia Treaty Organisation (SEATO).

In addition to this, such an aircraft would also allow the RAF to deter, and if necessary to fight, limited wars in theatres outside Europe as part of its commitments to maintain the internal and external security of those territories for which it was responsible, to whom there were obligations, or in which the UK had essential economic interests.

Thus besides operating over Europe, the UK based TSR.2 force was also to provide world-wide overseas reinforcement of British bases in the Near East Air Force (NEAF), Air Force Middle East (AFME) and Far East Air Force (FEAF), and of other such areas as might be necessary in support of any one of several contingency plans which existed for the defence of these regions.

Of the regional alliances, NATO is perhaps the best known. Since its formation in April 1949, NATO's primary and enduring objective has been to deter aggression against its member states. In the early 1960s, NATO strategy in the event of an enemy offensive was to respond immediately with a massive nuclear strike against both the armed forces and homeland of that enemy. Thus the RAF's tactical air power within the NATO context was no longer primarily concerned with close air support, interdiction or counter-air operations with conventional weapons, but with the employment of nuclear weapons for these purposes.

This NATO strategy however was changed from 1967 when it was replaced by one of Flexible and Appropriate Response. This new strategy was intended to present SACEUR with a flexible range of options with the ability to tightly control an escalation from 'minimum response' with conventional weapons to 'maximum response' with nuclear weapons, according to the level of threat.

CENTO took its cue from the success of NATO and a continuing Cold War Soviet threat to countries of the Middle East originating in a Turco-Iraqi pact for mutual defence signed in February 1955. For various diplomatic and military reasons Britain and Pakistan both joined this treaty which became known as the Baghdad Pact in April 1955. CENTO was born when Iraq pulled out of the treaty in 1959.

Thus as part of NEAF, TSR.2 was seen as being necessary to look



XR219 during an early test flight 'with everything down'. (Credit: BAE Systems NW Heritage Group via Danny Barbour)

after British interests in the area and meet both Strike and Reconnaissance commitments to CENTO. In so doing, British support for its friends and allies in the Near and Middle East would be demonstrated, whilst also helping to maintain the peace in what was considered to be an unstable area.

SEATO grew out of the perceived threat posed by the Soviet Union and communist China to the nations of South-east Asia and the Western Pacific area during the early 1950s, typified by the Korean War and Franco-Viet Minh struggle in Indochina. Eight nations, (Australia, Britain, France, New Zealand, Pakistan, the Philippine Republic, Thailand and the United States), all signed a collective defence treaty which came into effect from 19 February 1955.

FEAF's commitments thus covered an area stretching from the Timor Sea almost to the Tropic of Cancer and TSR.2 was seen as the instrument by which Britain could demonstrate its peacetime intention to deter, and wartime ability to engage, an enemy throughout the region.

The role of the TSR.2

The tasks to have been undertaken by the TSR.2 force based in Europe were primarily seen as the maintenance of a flexible tactical nuclear capability which would act as a deterrent to any Soviet aggression as part of the overall contribution to NATO which might not warrant automatic massive strategic retaliation on the Soviet homeland.

The TSR.2 was therefore required to deliver tactical nuclear weapons effectively from low altitudes at the maximum range available, with minimum consideration of the prevailing weather conditions by day and by night; to deliver conventional high explosive weapons effectively as an alternative to the tactical nuclear weapons; to obtain reconnaissance information for all tactical purposes including target mapping at low altitudes under all weather conditions by day or night using radar and/or photography, and also to be capable of carrying out all of the above mentioned tasks at medium altitude as an alternative to low altitude.

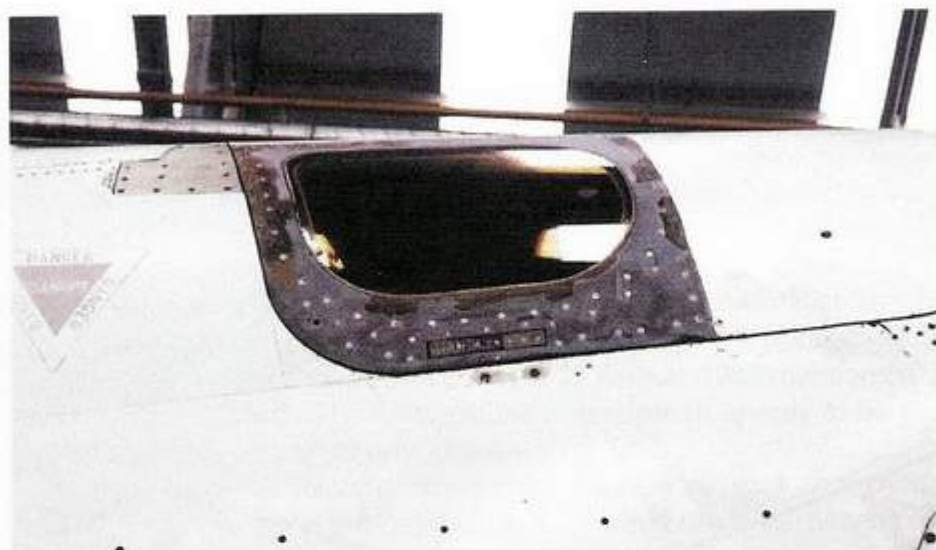
The flexibility in role and tactics of the aircraft in the air were consid-



TSR.2, X.01, XR219 nearing completion at Weybridge in early 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)



RAF Museum's Cosford's TSR.2, XR220



Pilot's and navigator's gold-tinted canopy hoods

ered to be dependent upon an equal degree of flexibility on the ground. To meet this requirement it would be necessary for the aircraft to be able to operate from small airfields with rudimentary surfaces and restricted maintenance facilities.

The only way these requirements could be met was by the development of the airframe, its weapons and its ground support equipment as an integrated 'weapons systems' where all aspects of the airframe, weapons and associated equipment were designed and developed concurrently and mutually.

Whilst OR 343 mentions support of the Army to be one of the roles to be undertaken by TSR.2 it was not intended to be a Hunter replacement in the close support role. This was certainly considered at one stage, but the Air Staff concluded that a smaller aircraft with a quick reaction time was essential for this task and the supersonic V/STOL P1154 multi-role fighter evolved to meet this requirement.

An alternative strategic role?

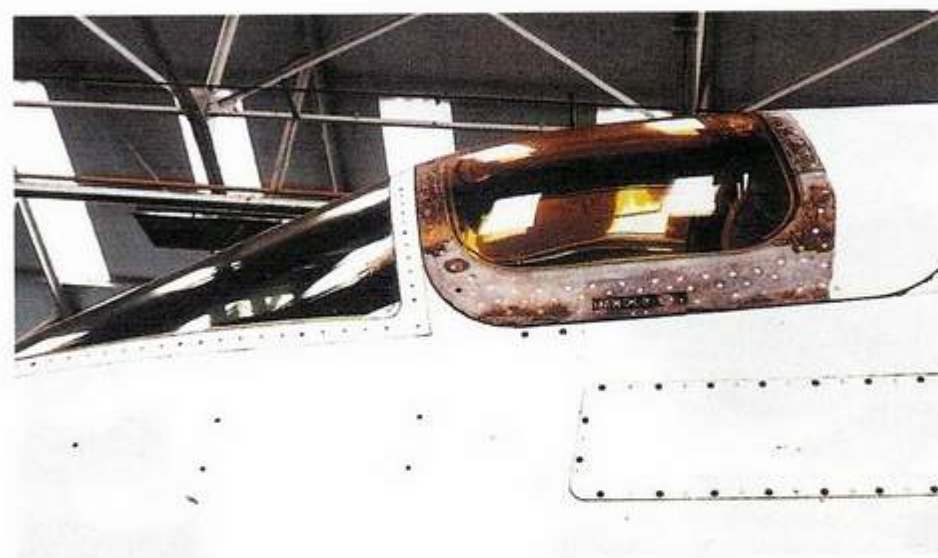
In July 1960 the Minister of Defence requested that a study be made of the possibility of using TSR.2 as a contribution to the strategic nuclear deterrent which at that time was carried by the RAF's V-Bomber force. Several proposals as to how TSR.2 might be utilised as a strategic bomber with stand-off weapons were put forward, (some of which will be examined in more detail in a later article), but ultimately it was decided that since in Europe the TSR.2 squadrons would be assigned to SACEUR for tactical operations, their contribution to the deterrent with or without stand-off weapons was a bonus.

As it was not known whether in the light of the existing plans to introduce the air launched Skybolt ballistic missile the provision of a stand off weapon for TSR.2 would be cost effective, it was considered sufficient for TSR.2 to be armed with free fall weapons which could be used against both strategic and tactical targets. Thus when the TSR.2 was accepted by the Defence Committee, it was accepted as a tactical aircraft.

As is now known, BAC won the contract to design and build what became known as the TSR.2 and on 6 October 1960 Contract KD/21/02CB42a for nine development aircraft was placed, with the



Nose section of XR220 showing the Emergency Canopy Jettison handle under the navigator's position



first prototype, XR219, taking to the air for the first time on 27 September 1964.

Prototype colours

Shortly after the contract was placed, the Air Ministry issued a new AMO concerning the camouflage and marking of RAF aircraft. AMO A.239, dated 23 November 1960, described four basic colour schemes for RAF aircraft. These were White aircraft, Silver aircraft, Camouflaged aircraft and Grey aircraft.

Whilst Tactical Strike and Reconnaissance aircraft were included in the 'Camouflaged Aircraft' category, for some reason, probably related to the TSR.2's perceived nuclear role, the first three development aircraft were finished in the overall Anti-Flash White Scheme specified for Medium Bombers and Long Range Photographic Reconnaissance Aircraft.

On TSR.2, this consisted of a proprietary finish for high speed aircraft under the provisions of DTD900/4740 manufactured by ICI. This consisted of a yellow chemical resistant cold-cured epoxide primer RAF Vocab of Stores reference 33B/220-2444 with a White Acrylic top coat 33B/220-2441 which covered most of the airframe except for the nose cone, various di-electric panels and a few areas which were to remain in natural metal, mostly around the 'hot' end of the aircraft. The national markings, serial number and airframe stencilling were applied in Pale Red 33B/220-2442 and Pale Blue 33B/220-2443 to the same specification.

The upper wing roundels were of 60 inches diameter whilst those on the fuselage were of 36 inches diameter with no roundels being applied under the wings. The fin marking was 24 inches square, whilst both the fuselage and under wing serial numbers were applied in characters 16 inches high.

Due to the anti-flash requirements, BAC found themselves limited to the use of Pale Blue and Pale Red for airframe stencilling and warning notices. They therefore adopted the policy of reserving the Pale Red for emergency notices and signs such as the ejection seat warning triangles with all other information in Pale Blue. The 'No Step' wing walkway markings initially appear to have consisted of Pale Blue lines but these were subsequently modified by the addition of Pale Red 'feathers' around their outside edge.



16 inch high Pale Blue serial number under the starboard wing – note its position at right angles to the fuselage centre-line



16 inch high Pale Blue serial number presentation on the port rear fuselage side just in front of the leading edge of the taileron



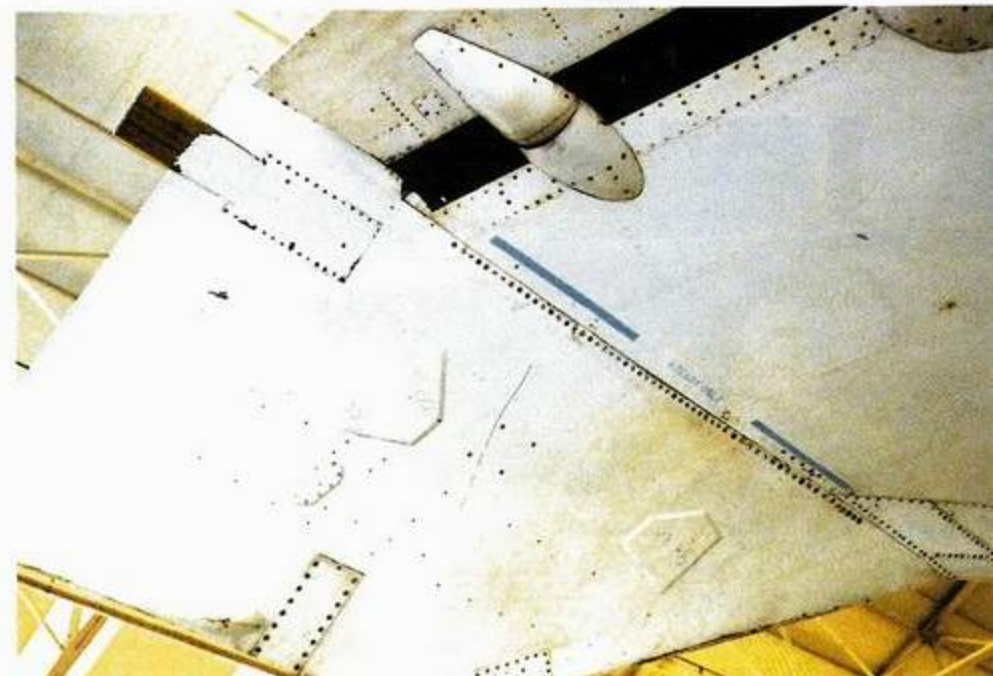
24 inch x 24 inch Pale Red/White/Pale Blue fin flash on the all-moving fin



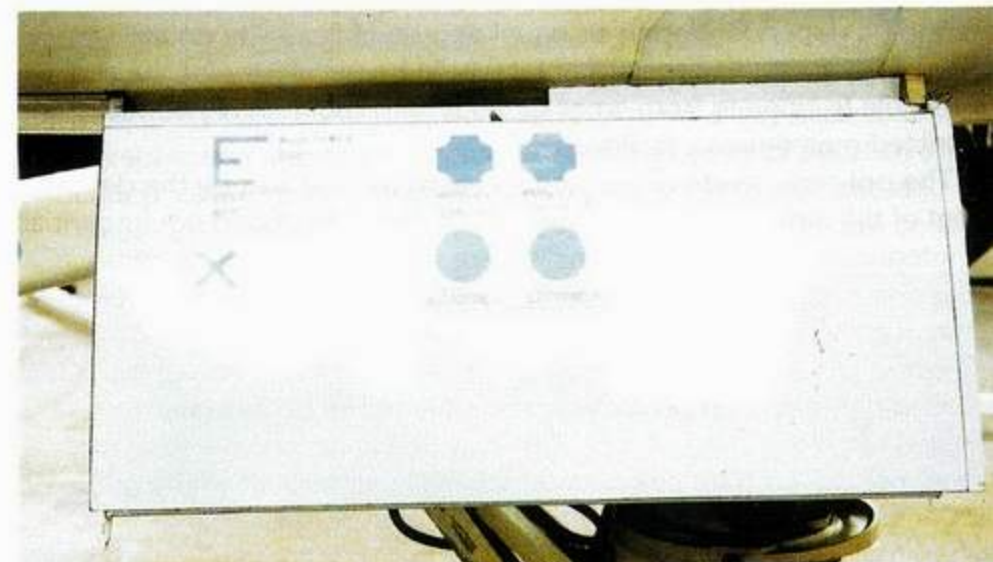
The DTD 900/4740/S paint specification stencilling in Pale Blue



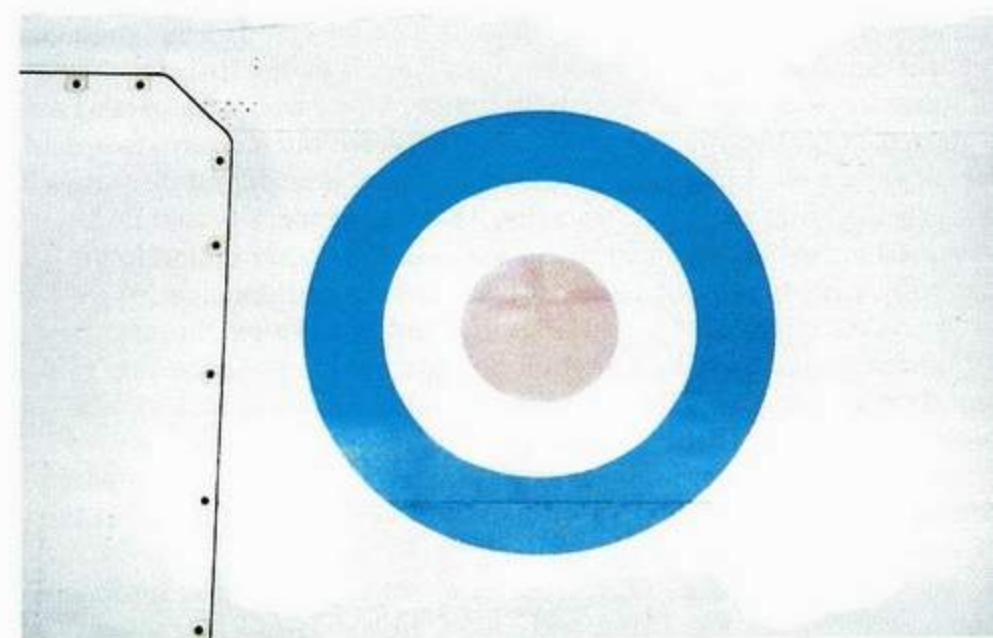
Pale Blue 'information' stencil markings on the nosewheel door



Pale Blue steadying trestle markings under the port wing tip



Close-up of the Emergency Canopy Jettison handle under the navigator's position with Pale Red 'warning' stencilling and 'explosive' triangle



36 inch diameter Pale Red/White/Pale Blue fuselage roundel



XR219 'above the clouds' during an early test flight in the late summer of 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)

To what, if any, extent the acrylic finish would have been retained on production aircraft is unclear. An unspecified acrylic white finish had been applied to two Valiants as a service trial but by October 1963 this finish had been found to be in a very unsatisfactory condition having started to flake and peel to the point where both aircraft needed to be stripped back to bare metal and repainted.

As the parent firm of the Valiant, Vickers would appear to have already been aware of the inadequacy of the extant acrylic finish by this time as a letter from Vickers Assistant Chief Engineer (Aircraft) to the MoS Resident Technical Officer dated 27 August 1963 mentions a change in paint finish to be amongst the amendments shortly to be made to various colour scheme drawings for TSR.2.

One aspect of the colour scheme which may not be readily apparent to the casual observer is the 'gold' tint in the cockpit canopies, a result of the incorporation of a protective oxide to reduce the effects of nuclear flash upon the aircrew. It is thought that this was done because the solution to the same problem on the V-Bombers of providing the crew with blinds was impracticable on TSR.2 and as it was expected to carry out nuclear weapon sorties, the crew's vision would need some protection.

What would TSR.2 have been named?

Although no document has as yet come to light which unequivocally proves that such a policy existed, it is thought that from the early 1960s it was Air Ministry and later MoD policy to name Fighter and Strike aircraft after birds of prey. Examples of this practice are to be found in the Hawker P.1127 which was named 'Kestrel', its developed form which was named 'Harrier' and the Hawker Siddeley P.1182 which was named 'Hawk'. TSR.2's supposed replacement, the F-111, would in all probability have been named 'Merlin' – a name suggested by the then AOC-in-C Bomber Command due to the Merlin's act of sweeping its wings back as it strikes. It is claimed that the name which the Chief of the Air Staff favoured for TSR.2 was 'Eagle', which would fit with the apparently prevailing policy of the time, although this cannot be confirmed. In any event, the name never seems to have been officially adopted prior to cancellation.

Plan 'P'

Whilst the aircraft industry was getting on with building the aircraft, the RAF was beginning to consider where it should be based. A full picture of the RAF's plans for the deployment of TSR.2 can be gained from the plan drawn up in March 1964 for the 1964 Defence Review Costings, which set out the proposed size and deployment patterns of all RAF front line squadrons for a ten year period up to March 1975.

The latest in a series of plans which were designated by letters, Plan 'P' stated that the total TSR.2 requirement for this period was 193 aircraft, which were envisaged as being deployed as follows:

Bomber Command

- Two Squadrons of Light Bomber/Strike aircraft each having twelve aircraft
- One Squadron of Reconnaissance aircraft of eight aircraft.
- Up to six pre-production aircraft were to be introduced from June 1966 and retained until 1968 when they would be replaced by production

aircraft. Build-up to full squadron strength, the formation of the second Strike squadron and the Reconnaissance squadron were to have been completed by the end of March 1970.

RAF Germany

- Two Squadrons of Light Bomber/Strike aircraft each having twelve aircraft
- Two Squadrons of Reconnaissance aircraft each having eight aircraft.

RAF Germany was to be the focus of the first fully operational deployment of the TSR.2 with the first Strike squadron receiving six aircraft from March 1968, with the second Strike and first Reconnaissance squadron receiving their aircraft by the end of March 1969. The second Reconnaissance squadron was to be fully equipped by March 1970.

For the RAFG based squadrons, the aircrew establishment was to be eighteen crews on the Strike squadrons and ten crews on the Reconnaissance squadrons. It is thought that these manning levels would be repeated in other Commands.

Near East Air Force

- Two Squadrons of Light Bomber/Strike aircraft each having eight aircraft
- One Squadron of Reconnaissance aircraft of eight aircraft.

The first Strike squadron was to form by the end of March 1970 with the second Strike and Reconnaissance squadrons forming by the end of March 1971.

Far East Air Force

- One Strike and Reconnaissance squadron of ten aircraft to form between March 1970 and March 1971.

Thus, the envisaged Front Line Strength was 106 aircraft with up to a further eighteen on the strength of the TSR.2 Operational Conversion Unit (OCU) and an unknown number in service with other second line units such as the A&AEE.

Plan 'P' stated that the total TSR.2 requirement was for 193 aircraft. This figure was calculated on the basis that aircraft wastage during the build-up to the full front line and training Unit Establishments (UE) would be replaced but that no aircraft would be bought to meet subsequent wastage. By subtracting the total front line strength and OCU allocation from the requirement, one is left with a total of sixty-nine aircraft to form a reserve against combat or accidental loss. It would appear that the RAF expected to lose three aircraft per year through accident, so a reserve of this size would, in theory at least, have allowed the TSR.2 force to remain viable for over twenty years.

It was forecast that deliveries would be made to the following schedule:

- 1966-67: six pre-production aircraft, (which would ultimately be returned for modification to production standard and were included in the total of 193);
- 1967-68: twenty-one aircraft;
- 1968-69: forty-four aircraft;
- 1969-70: forty-eight aircraft;
- 1970-71: fifty aircraft and
- 1971-72: thirty aircraft



Forward cockpit controls (Photo: Trevor Snowden)



Rear cockpit ejection seat (Photo: Trevor Snowden)

The Spotswood Report

Even as Plan 'P' was published, at the end of March 1964 a report, which examined the way in which the RAF might contribute to national defence policy by exercising the strategic mobility and flexibility of air power to its fullest extent in the most economical way possible up to 1980, was completed and submitted to the Air Council. Officially titled 'The Future Front Line of the Royal Air Force', this report appears to have been colloquially known within the Air Ministry as the 'Spotswood Report', after its author Air Vice Marshal Spotswood.

The report began with a summary of the major and connected circumstances which demanded a critical examination of the requirements for Britain's air power in the future. These were perceived as being (a) the run down of the V-force and the consequent loss of a wide and flexible capability besides nuclear deterrence which would reduce Britain's capability for a 'controlled response' on a world wide basis; (b) providing a controlled response to provide an element of deterrence across a broad spectrum of possible types of aggression; (c) the need for Britain to maintain her influence in world affairs consistent with her economic and political needs backed by military force; (d) the growing threat from a number of nations capable of involving Britain in a limited war, and in the case of China nuclear war; (e) the cost of weapons systems which increased more rapidly than the Gross National Product but which nevertheless had to be found from a fixed proportion of it; (f) high personnel costs, and finally (g) the need to limit overseas expenditure as far as possible.



Forward cockpit ejection seat (Photo: Trevor Snowden)



Rear cockpit controls (Photo: Trevor Snowden)

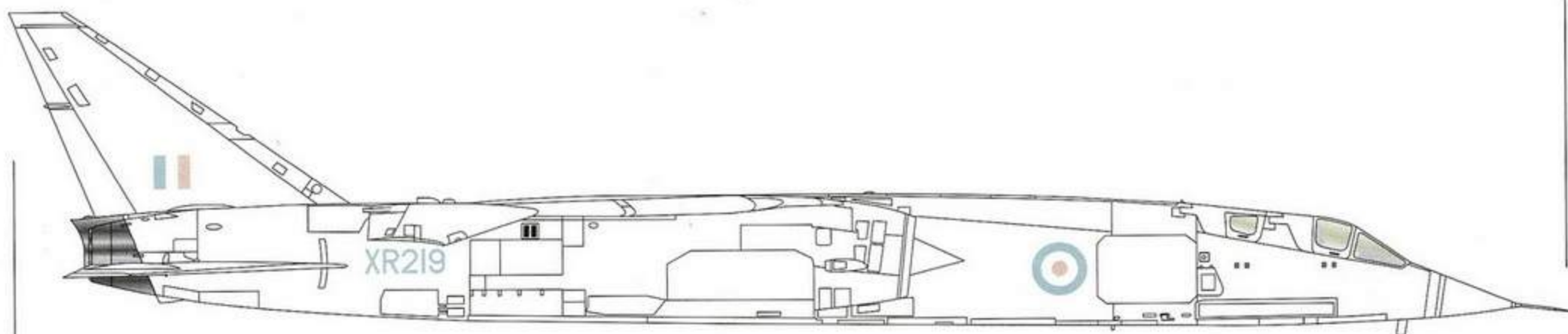
The Strike and Reconnaissance Force

The Spotswood report envisaged that in 1966, the RAF's long range Strike and Reconnaissance Force would consist of 270 aircraft of which 200 would be strike and the remaining seventy specifically for reconnaissance. The Strike element would consist mainly of the V-Bombers which as an alternative to its nuclear capability, would be able to carry 1,000lb bombs in a conventional role. Under the current plans, the next decade or so would see a marked change in these capabilities as the RAF's long range Strike and Reconnaissance capability would consist of about 100 TSR.2s for both functions. Thus the conventional bomb lift capability would only be a small fraction of the 1966 figure.

Whilst Britain's strategic nuclear capability would be preserved by the Royal Navy's Polaris system, the UK's ability to deter lesser forms of aggression, wherever it might be threatened, would therefore be considerably reduced. Whilst it was envisaged that improvements in accuracy and penetration capability would make the bomb lift available to the RAF in the 1970s more effective weight for weight, it was felt that this could not make up for the smaller number of aircraft which could be deployed and the weight of attack which they could deliver under limited war conditions. It was believed that this would adversely affect Britain's ability to deter, or prevent, the escalation of 'bush fire' wars into limited wars, or if this occurred, to operate effectively under such conditions.

Suggested modifications to Plan 'P'

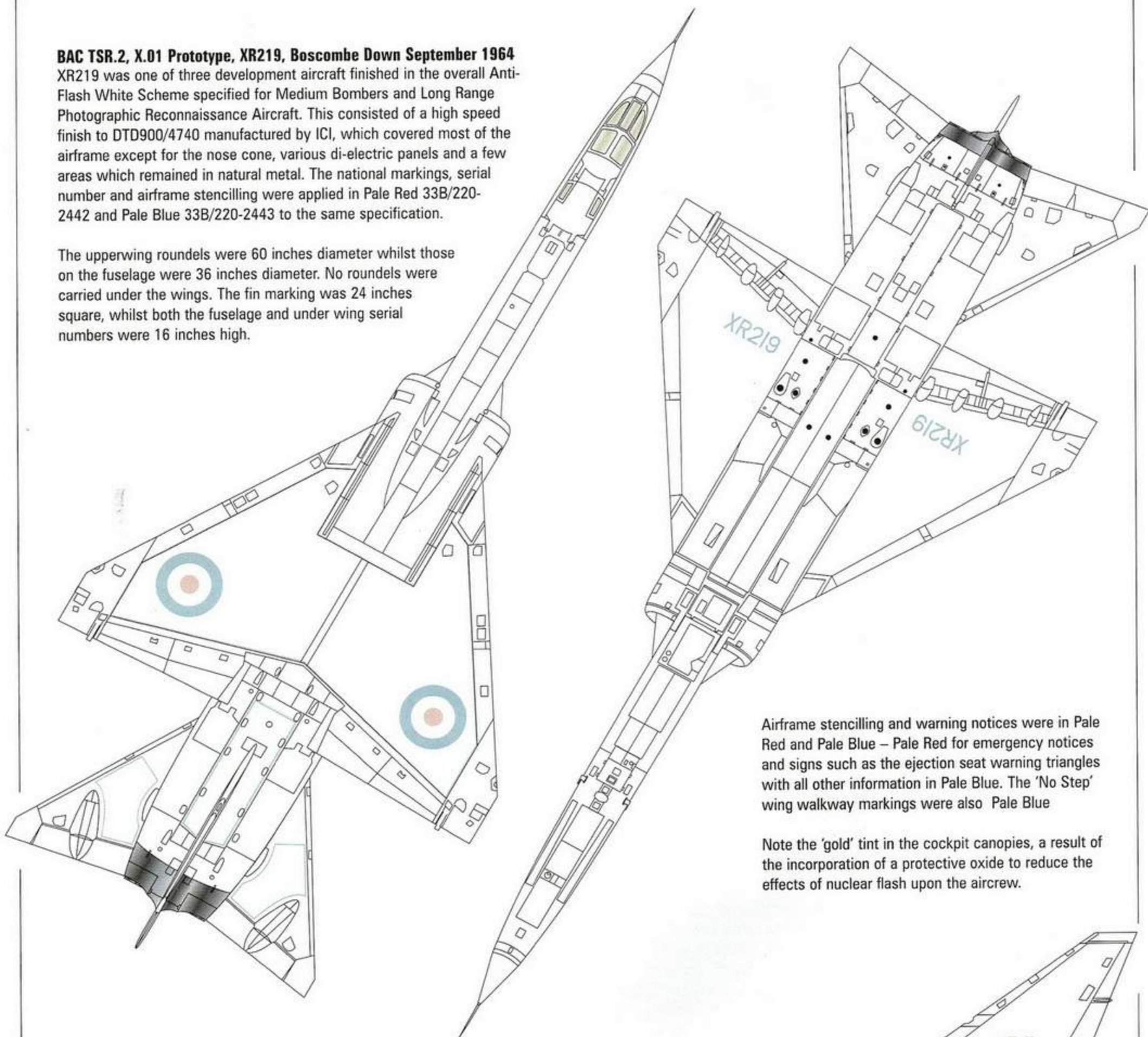
It will be recalled that Plan 'P' called for thirty-two TSR.2s to be



BAC TSR.2, X.01 Prototype, XR219, Boscombe Down September 1964

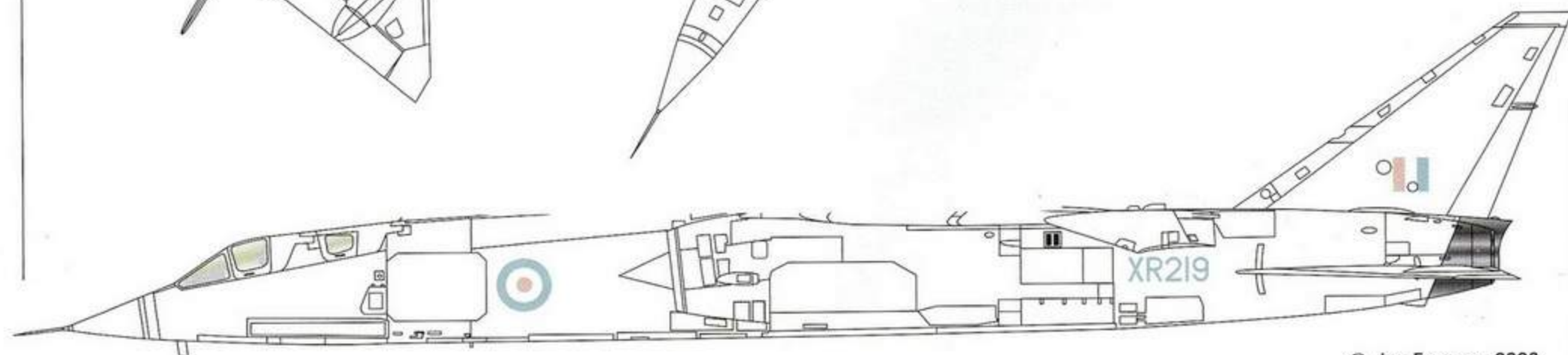
XR219 was one of three development aircraft finished in the overall Anti-Flash White Scheme specified for Medium Bombers and Long Range Photographic Reconnaissance Aircraft. This consisted of a high speed finish to DTD900/4740 manufactured by ICI, which covered most of the airframe except for the nose cone, various di-electric panels and a few areas which remained in natural metal. The national markings, serial number and airframe stencilling were applied in Pale Red 33B/220-2442 and Pale Blue 33B/220-2443 to the same specification.

The upperwing roundels were 60 inches diameter whilst those on the fuselage were 36 inches diameter. No roundels were carried under the wings. The fin marking was 24 inches square, whilst both the fuselage and under wing serial numbers were 16 inches high.



Airframe stencilling and warning notices were in Pale Red and Pale Blue – Pale Red for emergency notices and signs such as the ejection seat warning triangles with all other information in Pale Blue. The 'No Step' wing walkway markings were also Pale Blue

Note the 'gold' tint in the cockpit canopies, a result of the incorporation of a protective oxide to reduce the effects of nuclear flash upon the aircrew.



based in the UK, forty TSR.2s in RAF Germany, twenty-four TSR.2s in the NEAF and ten TSR.2s in the FEAF, giving a total front-line strength of 106 aircraft. The Spotswood report ventured the opinion that the strength and distribution of this force was neither in consonance with the aims of British defence policy nor with the commitments that it was supposed to meet.

In NATO, the assigned TSR.2s, together with a number of F/GA/R aircraft, were expected to replace the twenty-four Valiants, eighty-eight Canberras and sixteen Hunters assigned, as well as a further eight Valiants and eight Canberras which were under RAF control, but were earmarked for NATO should war break out. The replacement for these forces by TSR.2s had been worked out on a basis of 1:1 for Valiants, 1:2 for Canberras in Germany and 1:1 for the earmarked Canberras.

These ratios corresponded to the nuclear capabilities of the aircraft concerned. The TSR.2 was a 'dual carriage' aircraft, ie it could carry two nuclear weapons. The Valiants assigned to SACEUR were also 'dual carriage' and therefore needed to be replaced on a one for one basis to maintain coverage of the same number of targets. The Canberras on the other hand were only 'single carriage' and therefore only half as many TSR.2s would be required to cover their targets.

No plans had been made for the replacement of the ten PR Canberras assigned in the Mediterranean or the earmarked reconnaissance Valiants, (later Victors). In the timescale under review, given that the sophistication of the threat could only increase, this was considered to be a very austere ratio.

In CENTO, Britain was the only major power and its contribution was forty Canberras. It was felt that any notable reduction in the effectiveness of this contribution could lead to a weakening of resolve on behalf of the other contributing nations and perhaps lead to the increased possibility of Soviet, or other military, adventures in the Near or Middle East. If the general rule for NATO assigned forces of replacing two Canberras with one TSR.2 was accepted, then there would be a requirement for twenty TSR.2s in the NEAF which was a reduction of four aircraft on the present plan.

As far as the FEAF was concerned, the need to contain the growing strength of China and Indonesia whilst offering a significant contribution

to SEATO made it clear that a force of ten TSR.2s, even if they could be rapidly reinforced by aircraft from another theatre, was unrealistically small. In addition to this, should another war, (besides the conflict in Vietnam which was just getting into its stride), break out in South East Asia, especially in a SEATO context, tensions in NATO might be such that the despatch of such reinforcements to the Far East might prove to be impossible politically. It was therefore thought that since Commonwealth as well as SEATO commitments had to be considered, that a force of at least twenty TSR.2s, in addition to naval carrier forces, would be required to provide the necessary military and political influence to deter aggression from both the north and south of the region.

A strategic reserve

It was considered that the forces described above were minimal even to provide a presence and intent under normal conditions and that the air strength of potential aggressors made it clear that these forces would be insufficient by themselves in times of tension or outright aggression irrespective of whether any of Britain's allies might be involved or not. Despite this, only the eight reconnaissance TSR.2s earmarked for SACEUR could possibly be considered as a strategic reserve. In a world where Britain might be called upon to support other Commonwealth countries, such as India, in the event of an attack, or to contain a potential enemy such as Egypt if it threatened Libya under circumstances where Regional pacts did not apply, and perhaps where assistance from Naval Aviation was not available, this situation was considered to be unacceptable.

It was suggested that a strategic reserve must therefore be provided which would remain under national control to meet the needs of reinforcement in the Near, Middle and Far East, or indeed anywhere that the rapid deployment of an obviously potent force could deter the outbreak of a limited war with its attendant possibility of escalation. Taking the eight TSR.2s earmarked for NATO which might reasonably be expected to be available for deployment in an emergency as part of a strategic reserve into account, it was suggested that a further twelve aircraft, making a minimum viable force of twenty TSR.2s, should be provided for this purpose.



XR219 at Boscombe Down prior to its first flight in September 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)



XR219 during an early test flight from Boscombe Down in September 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)

Deployment

With regard to the deployment of the TSR.2 force, the Spotswood Report foresaw the advent of the TSR.2 as introducing new possibilities of combining operational, organisational and economic advantages without a loss in effectiveness. Up to this point it had been found necessary to deploy on the Continent all those aircraft assigned to Allied Command, Europe with the exception of the V-Bombers and Fighter Command, due to the range limitations of the aircraft and the consequent need to base them forward for tactical reasons.

Now however, it was thought not only feasible, but desirable to consider deployment of the NATO Strike/Reconnaissance force in the UK for the following reasons. Firstly, the TSR.2's range and ubiquity made it unnecessary for the type to be based in a forward position on a permanent basis. By basing the aircraft in the UK instead of Germany, their vulnerability to surprise attack, which was a matter of great concern to SACEUR, would be considerably reduced. It was also argued that no attack on aircraft based in the UK by the Soviets could possibly be construed as an act of 'limited war' which would reduce further the possibility of a confrontation in central Europe.

Secondly, the deployment of the TSR.2 force on home bases would ease the maintenance problems implicit in such a complex weapons system as well as reducing the running costs, especially in foreign exchange.

Thirdly, full advantage could be taken of the complex of already extant infrastructure of communications, bases and dispersal airfields built for Bomber Command.

Finally, the strategic reserve squadrons should also be based permanently in the UK as such a deployment would then make feasible the provision of the NEAF and FEAF theatre components on a rotational basis which was thought to be desirable on both technical and economic grounds.

Summary

The Spotswood Report therefore concluded that the TSR.2 force required was sixty-three aircraft based in the UK assigned to SACEUR; twenty aircraft in NEAF and declared to CENTO although the individual squadrons would deploy on a rotational basis from the UK; twenty aircraft in FEAF also deployed on a rotational basis from the UK and a UK based strategic reserve of twenty aircraft, of which eight would be earmarked for NATO, thus giving a front-line total of 123 aircraft.

TSR.2 bases

Whilst Plan 'P' and the Spotswood report outlined the deployment of TSR.2 on a Command basis, it did not specify which Stations the type would operate from. The minutes of a meeting on TSR.2 Planning and Progress held at the Air Ministry on 1 May 1963 reveal that the deployment policy as envisaged at this time foresaw that likely bases in the UK were Coningsby, Marham and Wyton.

Coningsby was chosen as the first UK base and home for the TSR.2 OCU for a number of reasons. Firstly, it met the basic airfield requirements in terms of size and facilities on site. Secondly it was conveniently close to two designated low flying areas which would be of use to the OCU. Finally, two squadrons of Vulcans, one of the most noisy aircraft in the RAF's inventory, had been operating from there for some time without drawing an unfavourable reaction from the public.

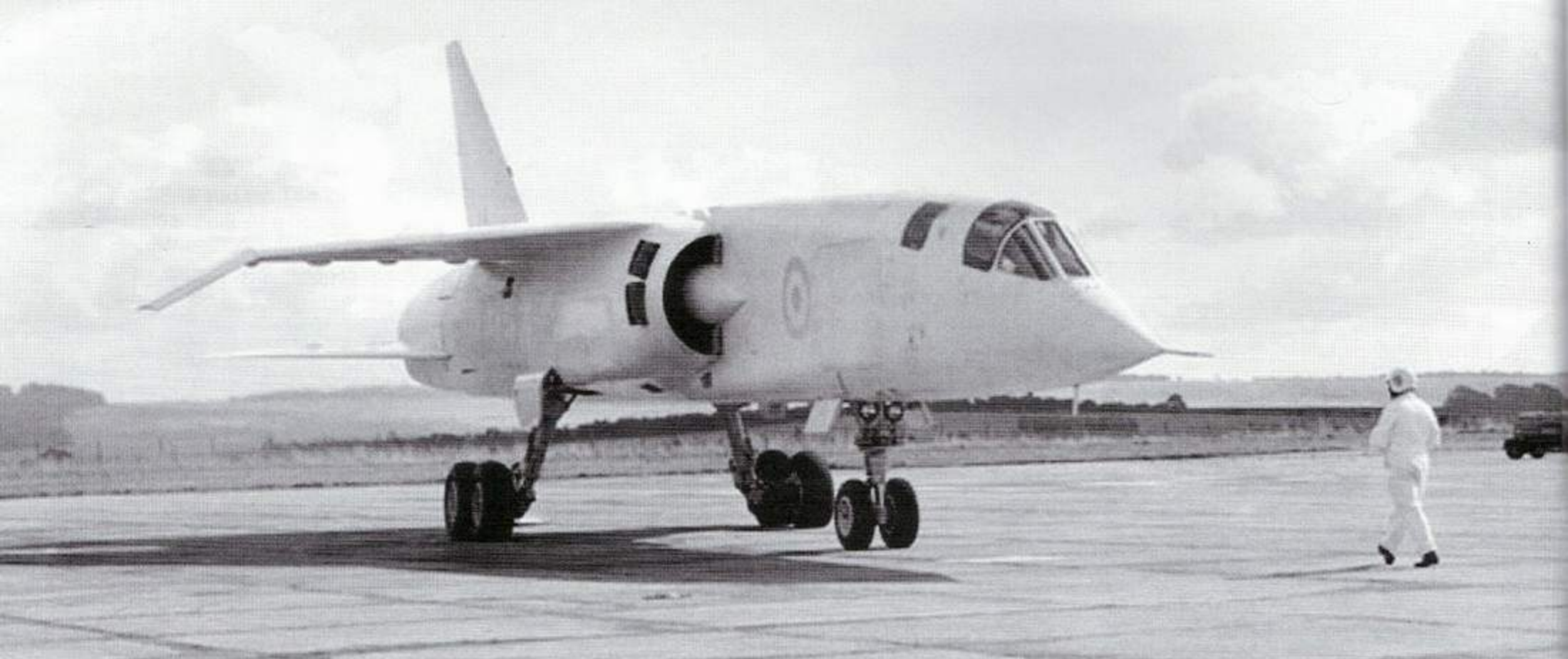
Whilst Coningsby remained the choice of location for the OCU for the duration of the TSR.2 project, a minute from the Directorate of Operations dated 4 March 1965 discussed the questions surrounding the future location of the TSR.2/TFX and tanker force. Whilst Marham had been suggested as the base of the first operational TSR.2 squadrons in 1963, by 1965, Marham was being suggested as the long term base for the RAF's tanker fleet and Honington for the TSR.2/TFX.

Wyton was of course the 'home' of RAF Photographic Reconnaissance and it is therefore not surprising that this was suggested as the base for the TSR.2 Reconnaissance squadron in 1963. By 1965 however, Wyton was considered to be unsuitable for TSR.2 as since the prototype had started flying, it had become apparent how noisy the aircraft was, and for some reason Wyton was considered to be unsuitable for noisy aircraft.

It was suggested that the ideal deployment for the TSR.2 was to co-locate both the Strike and Reconnaissance forces on the same airfield, which would allow the RAF to work towards giving the Reconnaissance force a Strike capability and get away from the rigid outlook that they were frozen in the reconnaissance role. ▶



XR219 immediately prior to its first flight on 27 September 1964 (Credit: BAE Systems NW Heritage Group via Danny Barbour)



XR219 taxiing-in after its maiden flight on 27 September 1964. (Credit: BAE Systems NW Heritage Group via Danny Barbour)

In the light of subsequent developments which saw Marham become the long-term tanker base whilst Honington was earmarked for the F-111, ultimately becoming the UK Buccaneer base, it would appear that Honington would have been the most likely base for the first operational TSR.2 squadrons. No further evidence has as yet come to light as to what Stations other than Coningsby, Honington, Marham or Wyton might have received TSR.2 in the UK.

Bases in Germany

In 1963 it was envisaged that whilst the OCU and an early limited Strike Capability would be based in the UK, the initial build-up of fully operational TSR.2 squadrons would take place in RAF Germany. Five RAF bases in Germany were considered for the location of TSR.2 squadrons with the final choice falling on Bruggen as being the most suitable as the first TSR.2 base. Bruggen was chosen because it already had the facilities required for Strike and Reconnaissance aircraft such as special (ie nuclear) weapons storage, a Quick Reaction Alert compound and a Mobile Field Photographic Unit. In addition to this, Bruggen was also home to a Maintenance Unit which was expected to be of considerable advantage during the introduction of the TSR.2 to Germany.

The second TSR.2 base in Germany was to be Laarbruch which had similar facilities to Bruggen. Each station was expected to accommodate a total of twenty aircraft.

Following the Spotswood report, the requirement for permanently basing TSR.2 in Germany was dropped. It might be reasonable to

assume however that TSR.2 could have been deployed to any of the RAFG bases on a temporary basis.

TSR.2 bases in NEAF, FEA and AFME

The TSR.2s allocated to the NEAF would be based at Akrotiri on Cyprus, whilst those allocated to the FEA would be based at Tengah in Singapore, as both of these Stations are believed to have been provided with storage facilities for nuclear weapons.

There never appear to have been plans for resident TSR.2 squadrons in AFME, but Sharjah and Khormaskar are listed as being intended for use for reinforcement of this theatre if required. No TSR.2 squadrons were to be permanently resident on Malta either, although Hal Far was earmarked as an overseas training base for the TSR.2 OCU from where training flights over Libya could be carried out.

A change in plans

The Spotswood Report was quickly accepted by the Air Council and as a result of the decision not to base TSR.2 in Germany, the total requirement for TSR.2 was cut back from 193 to 158. Despite the Spotswood Report's acceptance at the highest level within the RAF, the RAF's Directorate of Operations found much about it to criticise. The wrangling about the practicability of the general concept of the TSR.2 force as a flexible world-wide weapon, and the fine details of its implementation, between the Directorate of Operations, who appear to have subscribed to Plan 'P' and the Directorate of Air Plans who appear to have had some empathy with the Spotswood scenario, continued



XR219 during an early test flight from Boscombe Down in September 1964 (Photo: BAE Systems NW Heritage Group via Danny Barbour)

through the summer of 1964 and into the autumn, by which time they had more immediate problems to wrestle with such as wing-fatigued Valiants at Marham and new political masters in Whitehall.

A new government

During the run up to the General Election, which was held in October 1964, it had become apparent that TSR.2 had few friends in the Labour Party, which on the whole seems to have been bewitched with its US equivalent the F-111. Even the Conservative Government was looking for ways to economise on the TSR.2 project with the total buy being cut back yet again, from 158 to 110 aircraft, as an economy measure with the suggestion being made that the shortfall in numbers might be made up by purchasing a number of Buccaneers instead. It was this figure of 110 aircraft which was inherited by the Labour government, which was formed following the General Election of October 1964.

Whilst in opposition, the Labour Party had promised a thorough review of Defence spending which was completed by January 1965. At a Cabinet Meeting on 1 February 1965, the findings of the Defence and Overseas Policy Committee's review of the Defence Aircraft Programme, were presented to the government. At this meeting the Cabinet decided that the Hawker P.1154 supersonic V/STOL multi-role fighter and the Hawker Siddeley HS.681 V/STOL jet transport would be cancelled and F-4 Phantom and C-130 Hercules be obtained from the USA in their place.

The TSR.2 was a more difficult question, however. Besides the cost, there were a number of technical issues which the Committee thought needed to be resolved before a final decision could be made between the TSR.2 and TFX. The Committee had therefore been forced to conclude that the TSR.2 should continue for a few more months, with the final decision being taken in the light of additional technical information which was expected to become available during the intervening period, to which the Cabinet agreed. Thus by March 1965 the whole TSR.2 programme was hanging by a thread.

The final plan

An MoD report dated 19 March 1965 from the Joint Service Group on 'Requirement for TSR.2/TFX Type Strike/Reconnaissance Aircraft in the RAF', stated that there was a requirement for 110 TSR.2/TFX aircraft. Of these 110 aircraft, it was envisaged that seventy-four were to be deployed in the front line as follows:-

- In the UK twenty-four Strike and twelve Reconnaissance aircraft
- In NEAF sixteen Strike and eight Reconnaissance aircraft
- In FEAF eight Strike and six Reconnaissance aircraft

Of the remainder, ten aircraft would be serving with the OCU, five aircraft would be undergoing major repair or modification and the remaining twenty-one aircraft were in reserve against wastage. Given the projected wastage rate of three aircraft per year, the TSR.2 fleet would have had to begin to contract by the mid-1970s unless additional aircraft could be purchased subsequently.

On 10 March 1965, BAC submitted a revised estimate of delivery dates for production TSR.2s. Starting in April 1968, it proposed the delivery of one aircraft per month for the rest of the year except for November which would see the delivery of two aircraft. This gave a total of ten aircraft. 1969 would see two aircraft per month delivered except for January and July when only one aircraft would be delivered; September, October and November when three aircraft would be delivered and December when two aircraft would be delivered, giving a total for the year of twenty-five aircraft. A further thirty-seven were to be delivered in 1970 and twenty-eight in 1971 bringing the total number of production aircraft to 100.

With the refurbishment of some of the pre-production aircraft to bring them up to full production standard, this production run would thus meet the RAF requirement for 110 aircraft. It would appear that this production programme was the one forwarded to the MoD for subsequent use as part of the basis on which the final TSR.2/TFX decision was taken at two Cabinet meetings on 1 April 1965. **MAM**

Next Month:

Part Two – The TSR.2 enters service!

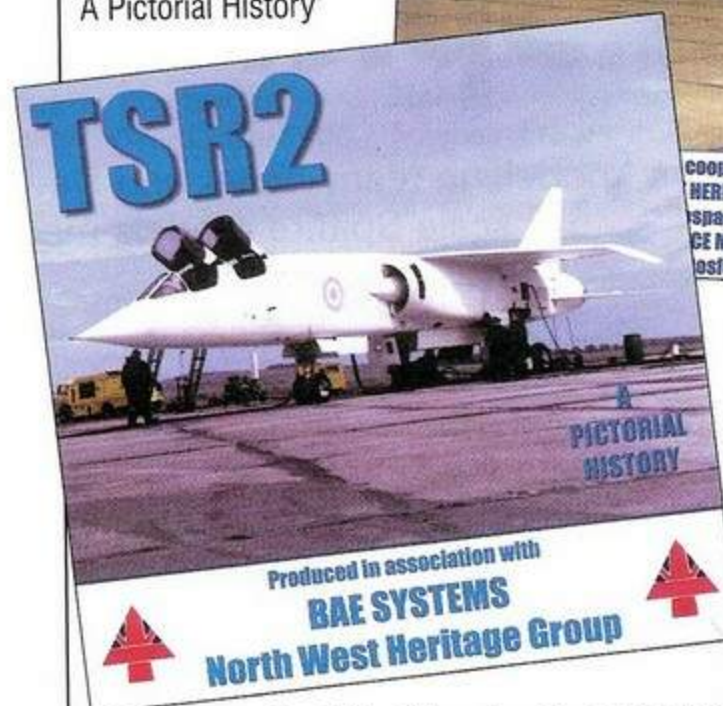
Paul Lucas looks at the proposed initial deployments at the Tactical Strike Establishment, Coningsby and the production camouflage schemes. Also in next month's issue, the first in a series of exclusive resin TSR.2 stores sets from SAM Publications.

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1. Mk VII NX-0

Spitfire Parade 1

Father and son 'modelling team', Peter and Dave Brown, offer details of a selection of their 1/48 scale Spitfire models made over the past few years

It can be a dangerous thing knowing the editor of 'MAM'! Towards the end of last year, my Dad and I were chatting to Neil – about Spitfires – when he 'just happened' to ask – it being the 70th anniversary of the Spitfire's first flight, and being aware that Dad and I had made virtually all the 1/48 scale Spitfire kits available – whether we would like to write about the ones we had made? I wasn't sure if I was being handed the Holy Grail or a Poisoned Chalice...

Most modellers reading this magazine will have built at least one model of a Spitfire – more than likely the first, or one of the first, kits you ever built. The brainchild of Reginald J Mitchell and developed by Joe Smith and his team, who took over after Mitchell's untimely death, the prototype K5054 was the first of over 22,000 airframes built in thirty-three different Marks and flown by pilots from a host of nations. The scope of the development achieved by Joe Smith and his team can be appreciated by the comparison between the Spitfire Mk I and the Seafire Mk 47, (see the accompanying table).

The main line of development was of course the pure Day Fighter, but the early introduction of photographic reconnaissance aircraft and then the Seafire, gave rise to other types. The Griffon engine, which replaced the Merlin, made further divisions, following several interim types which bridged the gaps – the most outstanding examples of these being the Mk IX and XIV.

	Spitfire Mk I	Seafire FR 47
Weight (normal):	5,820lbs	10,300lbs
Wing area:	242 sq/ft	244 sq ft
Wing loading:	24lb/sq ft	42.2 lb/sq ft
Max horse power:	1,050hp	2,350hp
Engine weight:	2,020lbs	3,650lbs
Max speed (straight):	362 mph	452 mph
Max diving speed:	450 mph	500 mph
Max rate of climb:	2,500ft/min	4,800ft/min
Time to 20,000 feet:	9.4 min	4.8 min
Weight of fire per second:	4.0 lbs	12.0 lbs
Internal fuel capacity:	85 gallons	154 gallons
Maximum range:	575 miles	1,475 miles
Rate of roll at 400mph:	14 degrees/sec	68 degrees/sec
Undercarriage stroke:	4.9 inches	9.0 inches

The Mk I, II and V were mainly distinguishable by engine changes with a progressive increase in power and the rated altitude of the Merlin. Later Marks, from the Mk VII to the Mk 22, are detailed with photos of models in this article.

Vickers Supermarine Type 360 – Spitfire Mk VII

The Spitfire Mk VII was designed as a high altitude interceptor to counter aircraft such as the Ju 86P and R high altitude bomber/reconnaissance aircraft. This version of Spitfire was the first to feature the twin-stage Rolls Royce Merlin 61 engine and had a four-blade propeller of 10 feet 9 inches diameter, as had all subsequent Merlin engined Marks.

The cooling system was redesigned to

incorporate two Morris radiators which gave the Mk VII, and again all subsequent Marks of Merlin-powered Spitfires, the symmetrical radiator arrangement. Fuel capacity was also increased by additional 12.75 gallon capacity tanks in the leading edges of the wings, increasing the internal fuel load of the aircraft to 121.5 gallons.

The Mk VII was also the first version of Spitfire to have the broad chord rudder, short span ailerons and retractable tailwheel fitted as standard. It also featured a pressurised cockpit. All Mk VII Spitfires were fitted with the 'c' wing, and initially with long span 'pointed' wing tips. These wing tips could, and were, variously replaced in the Mk VII's service career with the standard elliptical tips.

A total of some 140 Spitfire VII's were built and equipped three Squadrons, Nos 124, 131 and 616 Squadrons. No 124 Sqn was the first and was fully equipped with the type by May 1943. Fg Off Willis claimed the Mk VII's first 'kill' on 15 May when he shot down an Fw 190 at 38,000ft.

1: Modelling the Spitfire Mk VII

The Mk VII was made by Dave from the ICM Spitfire Mk VII kit boxing, (48062), virtually straight out of the box. The only modifications were the filling of the cockpit door panel lines, replacing kit part number B8 with a scratchbuilt full depth aft cockpit pressure bulkhead, which replaced the standard Frame 12 fitted to other Marks of Spitfire. The additional fuel tanks in

2a. Mk VIII AN-M



the wing leading edges were scribed in as panel lines. The IFF and beam approach aerials were added. The seat was replaced by a scratchbuilt one we moulded in resin and seat straps were added. The kit exhausts were opened out. The only serious omission was that the aft cockpit glazing was not deepened.

The model was finished as MD120, NX-O, 'Spirit of Kent', flown by Sqn Ldr James O'Meara whilst OC No 131 Squadron. It was finished in the Day Fighter (High Altitude) Scheme of Medium Sea Grey upper surfaces and PRU Blue undersides. I used the ICM decals which came with the kit – nicely printed but which were extremely difficult to apply!

Vickers Supermarine Type 361 – Spitfire Mk VIII

The Spitfire Mk VIII was designed to be the standard Merlin 60 series powered Spitfire and was essentially an unpressurised Mk VII. Spitfire F Mk VIIIs were powered by a Merlin 61 of 1,565hp and later by a Merlin 63 of 1,710hp; LF Mk VIIIs were powered by a Merlin 66 of 1,580hp and the HF Mk VIIIs were powered by a Merlin 70 of 1,475hp. All Mk VIII Spitfires had the larger Aero Vee universal carburettor air intake under the engine cowling and were fitted with the 'c' wing armament.

HF variants were generally fitted with the long span wingtips which could be changed for the standard wingtip when the operational need arose in service. The F Mk VIII was fitted with the standard elliptical wingtip and LF variants featured either the standard elliptical wingtip or a 'clipped' wingtip.

The first Mk VIIIs came off the production line in November 1942. Production was slow to start with and did not exceed fifty aircraft a month until May 1943. A total of 1,654 Mk VIIIs were built. Due to the increased fuel

capacity, totalling 124 gallons, the decision was made to send all Mk VIIIs to the Mediterranean and Far East Theatres of Operations.

No 145 Sqn based in Malta was the first Squadron to be equipped with the Mk VIII in June 1943. The first units in the Far East to receive the Mk VIII were Nos 81 and 152 Squadrons, late in 1943. The RCAF and USAAF used the Mk VIII in the MTO and the RAAF used them in the South Pacific.

2: Modelling the Spitfire Mk VIII

The HF Mk VIII was again made by Dave, cross-kitting parts from the ICM Mk IXc and Mk

VII kits. The only other additional work carried out was scribing in the leading edge fuel tanks, replacing the pilot's seat with our resin scratchbuilt one, adding seat straps and replacing the main wheels with ones from the True Details set. The kit exhausts were also opened out.

It was finished as JF627, AN-M of No 417 'City of Windsor' Squadron RCAF, based at Marcianese near Anzio, Italy in early 1944. The aircraft features the earlier 'standard' rudder which was fairly non-standard for Mk VIIIs.

It was painted in the Desert Scheme of Dark Earth and Mid Stone upper surfaces with Azure Blue undersides. The roundels and serial number used were from the Xtradecal range, the stencilling from AeroMaster and the codes, AN-M, came partly from the Tamiya Mk V and partly home made from white sheet.

The LF Mk VIII, made by Pete, is the ICM Spitfire Mk VIII kit virtually straight out of the box. The additional work carried out this time was scribing in the leading edge fuel tanks and some additional access panels, adding the aileron hinges, replacing the pilot's seat with our resin scratchbuilt one, adding straps and replacing the mainwheels with ones from the True Details set.

It was finished as MT714, FT-F of No 43 Squadron whilst based near St Tropez in Southern France, in August 1944. It wears the Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey undersides. The Sky fuselage band has been painted out, (with Ocean Grey), as it was not

2b. Mk VIII FT-F



2c. Mk VIII AF-Z



required in the MTO. The roundels and serial numbers used were Xtradecals, the stencilling from AeroMaster and the codes, FT-F, were made from strips of white and red decal sheet, (32 strips in all!).

The South East Asia Command standard F Mk VIII was made by Dave, this time from an Otaki Mk VIII with the wings replaced by those from the Academy Mk XIVc. It was finished as JG534, AF-Z of 607 County of Durham Squadron R Aux AF, based at Kalaywa, Burma in the spring of 1945. It wears the SEAC, Temperate Land Scheme of Dark Earth and Dark Green upper surfaces with Medium Sea Grey undersides. It also features the white SEAC recognition bands around the wings, tailplane and fin. The SEAC roundels are Almark, serials are Xtradecal, stencilling is from AeroMaster and the codes from Modeldecal.

► Vickers Supermarine Type 361 Spitfire Mk IX

Following the arrival of the Fw 190A in the skies over Northern France, the Royal Air Force urgently needed a fighter with equal if not better performance. The Spitfire Mk V was simply outclassed by the Fw 190A.

Luckily for the RAF, the Spitfire Mk III programme had been abandoned and the prototype, N3297, had been sent to Rolls Royce for use as a test bed. It was fitted with a Merlin 60 engine, (being developed for use in high altitude Wellingtons), after someone had asked, "What would be the result if a Merlin 60 was fitted to Spitfire?" N3297 was successfully flight tested on 27 September 1941, just seven days after the reported arrival of the Fw 190A. The performance of the Merlin 60 powered Spitfire was vastly superior to the Spitfire Mk V and was just what was needed.

At this stage, the Spitfire Mk VIII was still envisaged to be the mass produced 'standard' version of the Merlin 60 series powered Spitfire, but due to the time required to design the Mk VIII and put it into mass production, as well as the urgent need for a Spitfire that could tackle the Fw 190A, the Air Ministry proposed fitting Merlin 60s into Spitfire Mk Vc airframes as a stop-gap measure and thus was born the Spitfire Mk IX.

The only major external differences between the Mk Vc and early Mk IXs were the longer engine cowling and the twin underwing symmetrical radiators – required to cool the bigger engine, the oil and the intercooler. Standard F Mk IXs were powered by a 1,565hp Merlin 61 and later by a 1,650hp Merlin 63; LF

Mk IXs were powered by a 1,580hp Merlin 66; and the HF Mk



3a. Mk IX UM-V

balance elevator and larger Aero Vee carburettor air intake as on the Mk VIII. Very late production Spitfire Mk IXes featured cut down rear fuselages, teardrop canopies and broad chord rudders.

No 64 Sqn became the first RAF unit to equip with the Mk IXc, at Hornchurch in July 1942. It is interesting to note that this is almost exactly a year earlier than the first Mk VIII squadron became operational. The first RAF Squadron to operate the Mk IXc in the Mediterranean was No 81, going into action with the type at the end of January 1943. This was again brought about by the introduction of the Fw 190A in the MTO.

A total of 5,663 Spitfire Mk IXs were built, making this 'stop-gap' version the second most produced variant of Spitfire!



3b. Mk IX DB-L

IXs were powered by a 1,475hp Merlin 70.

Spitfire Mk IXs were initially fitted with the 'c' wing, (Mk IXc), or later on with the 'e' wing, (Mk IXe). Both types of wing were fitted with standard length ailerons. HF variants were initially fitted with the extended span, high altitude, wingtips which were changed to the standard wingtip when the operational need arose in service. The F Mk IX was fitted with the standard elliptical wingtip. LF variants often featured clipped wingtips.

Early production Mk IXcs featured the early style tailplane and elevator, found on the Mk V. They also featured the small carburettor intake as on the Mk V. Later production models featured the later style tailplane and enlarged horn

were from Xtradecals, the stencilling from AeroMaster. The code letters UM-V were made using strips of black decal.

The Mk IXe is the ICM Spitfire Mk IXe kit, virtually straight out of the box. Made by Dave, the only additional work carried out was scribing in the leading edge fuel tanks and some additional access panels, replacing the pilot's seat with our resin one, adding straps and replacing the mainwheels with True Details ones. The kit exhausts were opened out.

It is finished as ML686, DB-L of No 411 Sqn RCAF, based at Heesch, Holland in late 1944. The aircraft is portrayed fully bombed-up with a 500lb bomb on the centreline and two 250lb bombs under the wings. These come in the ICM kit so I decided to fit them as 2 TAF Spitfire IXes occasionally carried them.

Although ML686 was usually flown by Andy McNiece, on Christmas Day 1944 it was being flown by Flt Lt John J Boyle DFC, who, along with other 2 TAF squadrons, had been tasked to supply air support to the US Army in the Ardennes area. On the way out Flt Lt Boyle's

No 2 reported engine trouble so the pair returned to base early. Close to base they dived to reduce height and as the speed built up towards the end of the dive, an Me 262 of 1./KG 51 flown by Oblt Lamle suddenly appeared. Cannon strikes from Flt Lt Boyle set the port engine on fire and several more hits were scored before the Me 262 hit the ground.

ML686 was finished in the Day Fighter scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey under surfaces and Sky spinner and rear fuselage band, common to most single-engined RAF fighters operating in northern Europe in late 1944. The aircraft carries AEAF 'invasion' stripes under the rear fuselage only. Roundels are from Xtradecal, serial number from

Ventura, stencilling is AeroMaster and the codes are from the Watermark 'Canadian Spitfires' Sheet 48003.

3: Modelling the Spitfire Mk IX

The early Mk IXc was made from the ICM Spitfire Mk IXc kit virtually straight out of the box by Pete. The only additional work carried out was scribing the leading edge fuel tanks and some additional access panels, replacing the pilot's seat with the resin one we moulded, adding straps and replacing the mainwheels with ones from True Details.

It is finished as MA454, UM-V of No 152 Sqn based in Italy, circa mid to late 1943. It was finished in the Desert Scheme of Dark Earth and Mid Stone upper surfaces with Azure Blue undersides. The roundels and serial number

Vickers Supermarine Type 365 Spitfire PR.XI

The PR.XI was originally intended as the PR version of the F.VIII, but due to the possibility of confusion of designations, the PR.XI became a variant of the Mk IX.

In common with earlier Marks of PR Spitfire, PR.XIs carried no armament but did have increased fuel capacity which came from fitting full length, 66 gallon, wing leading edge tanks, giving the aircraft a total internal fuel capacity of 217 gallons – almost double that of the standard Merlin 60 series powered fighter variant.

The PR.XI also had the longer span ailerons associated with the Mk IX. All Spitfire PR.XIs had the deeper engine cowling 'chin' required by the larger 14.4 gallon engine oil tank.

Once again due to the urgent need for these aircraft, supplies came from two sources. Converted Mk IX aircraft and production built PR.XI. Early PR.XIs manufactured from Mk IXs had non-retractable tailwheels and the standard 'rounded' rudder plus some armour removed. They were powered by Merlin 61, 63 or 63A engines. Later PR.XIs had a retractable tailwheel, broad chord rudder and were powered by the Merlin 70.

The PR.XI could carry various camera installations such as two F52 36 inch vertical, or two F8 20 inch and one F52 20 inch oblique, or two F24 8 inch and one F24 8 inch or 14 inch oblique. Later aircraft could also

roundels are Almark, the serial number and code letters are Carpena.

Reference photographs of this aircraft, (see 'Eyes for the Phoenix' by Geoffrey Thomas, Hikoki Publications, page 209), clearly show the white SEAC bands over the rudder and elevators.

Vickers Supermarine Type 379 Spitfire Mk XIV

The Mk XIV was the first mass produced Rolls Royce Griffon powered variant of the Spitfire. The Mk XIV was again an interim type, required by the Air Ministry until the Mk XVIII could be mass produced. It was essentially a Mk VIII

aileron and standard wingtips. Later Mk XIVs were fitted with the 'e' wing, still with short span ailerons, but with the option for standard or 'clipped' wingtips, (ie Mk XIVe). Just to confuse matters, many SEAC Mk XIVcs, were fitted with .50 inch machine guns in the inboard cannon bay and 20mm cannon in the outer cannon bay, effectively reproducing the 'e' wing armament.

Early Mk XIVs had the standard canopy and fuselage but later production variants had the cutdown rear fuselage and 360° teardrop canopy. The difference between an F.XIVe and FR.XIVe, was that the latter had the ability to carry an oblique camera in the fuselage.

The first squadron to become operational on the Spitfire Mk XIV was No 610 'County of Chester' Squadron in January 1944, based at RAF Exeter. The total number of Spitfire Mk XIVs built was 957.

5: Modelling the Spitfire Mk XIV

The Mk XIVc is the Academy Minicraft kit built straight from the box by Dave. Seat straps were added and the exhausts were opened out. It is finished as RB156, DW•G of 610 'County of Chester' Squadron, based at RAF Exeter in early 1944. It is finished in the Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey under surfaces. The Sky spinner and Fighter Command rear fuselage band were common to most single-engined RAF fighters operating in northern Europe in 1944. The roundels

and serial number are Xtradecal. I used the kit's stencilling decals and the codes DW•G were Modeldecals.

The FR XIVe is also the Academy Minicraft kit, built straight from the box by Pete. Seat straps were added and the exhausts opened out.

It is finished as MV320 'X' of No 28 Sqn, based in Malaya in 1946. It wears the SEAC Tropical Scheme of Dark Earth and Dark Green upper surfaces with Medium Sea Grey undersides. It also carries white SEAC recognition bands on the wings, tailplane, elevators and fin. The SEAC roundels are Almark, serial letters/numbers are Carpena.

Photographs of this aircraft, (also in 'Eyes for the Phoenix' by Geoffrey Thomas), clearly show the white SEAC bands applied over the elevators.

carry a further two F24 5 inch cameras. These were located one under each wing between ribs 9 and 12, aft of the main spar.

The first unit to receive the Spitfire PR XI was 1 PRU at RAF Benson. A total of 476 Spitfire PR.XIs were built.

4: Modelling the Spitfire PR.XI

The late PR.XI was made from the ICM Mk IX kit, converted by Pete. The wings had the cannon blisters removed and various panel lines filled-in. Then the wing was rescribed to represent the PR.XI 'wet' wing. The fuel pump blisters were added under each wing.

The deeper engine cowling was made by tracing the profile on to a piece of 15 thou plasticard and sandwiching it between kit parts, D7 and D8, the lower engine cowl halves. The cowling was then built up using multiple layers of filler and sanded to shape.

The camera ports were drilled out and after the model was painted, punched discs of clear acetate sheet were fitted into the holes to represent the camera port glazing. The windscreen and canopy were from Aero-club. As with the other kits we replaced the pilot's seat with a resin one we had moulded, added seat straps and replaced the kit's main wheels with those from the True Details set.

The model is finished as PL781, 'F', of No 681 Sqn, operating in Malaya. It is finished in Medium Sea Grey upper surfaces and PR Blue undersides with white SEAC bands over the mainplanes, tailplanes and elevators, fin and rudder. The SEAC

with a Griffon engine, the six prototype aircraft coming directly off of the Mk VIII production line, serialled JF316 to JF321.

Production Spitfire XIVs had a larger fin and rudder to aid directional stability. They were powered by 1,785hp Griffon 61, 2,035hp Griffon 65 or 2,055hp Griffon 85 engines. All were fitted with a five-blade, Rotol propeller, of 10 feet 5 inches diameter. The Griffon engine required additional cooling so the frontal area of the Morris radiators was increased, giving the Mk XIV deeper radiators than the Merlin 60 powered Spitfires.

Initially all Mk XIVs came off the production line with the 'c' wing, (ie Mk XIVc), with short span



5b. Mk XIV X



Vickers Supermarine Type 380 Spitfire Mk XVI

The Spitfire Mk XVI was essentially a Mk IXe powered by a licence-built Packard Merlin 266 engine. The Mark number difference was required for spares ordering, due to the fact that the Packard Merlin used American standard thread forms and other American spares which were different to British threads or spares used on the British-built Rolls Royce Merlins.

Spitfire Mk IXs and XVIs were initially built on the same production line at Castle Bromwich. Separate lines were established as production and the supply of Packard built Merlins expanded. All Spitfire Mk XVIs had the 'e' wing with either standard or 'clipped' wingtips, although most appear to have 'clipped' wingtips.

A large number of Mk XVIs had the 360° teardrop canopy and cut down rear fuselage and appear to have been fitted with the broad chord rudder. All Mk XVIs served in the ETO, mainly being allocated to 2 TAF. The first squadron to be equipped with the Mk XVI was No 403 Sqn RCAF, based at Evere in Belgium, circa December 1944. A total of 1,053 Spitfire Mk XVIs were built.

6: Modelling the Spitfire Mk XVI

The high back LF XVIe is the ICM 'Czech' LF IXe kit, virtually out of the box, made by Dave. I decided to have the engine cowling and one gun bay open on this model. This is something that I do not normally do but I was interested to see what could be done just by using the parts supplied in the ICM kit, plus some wire and a bit of plasticard. Engine exhausts were opened out. I was pleased with the end result, *especially considering the fact that it cost less than £15.00, and being a Yorkshireman this means a lot!*

I am aware that the engine supplied in the kit is essentially a single stage Merlin 45, but you have to look very close to realise it. I

think the confusion may have come about by ICM using one of Duxford's flying Spitfire Mk IXs fitted with a single-stage Merlin as a basis for their kit. This can also be seen when looking at photos in the Aero Detail 27, 'Spitfire VI - XVI' book.

The only other additional work carried out was scribing the leading edge fuel tanks and some additional access panels, replacing the pilot's seat with a resin one we moulded, adding straps and replacing the mainwheels with ones from True Details.

6a. Mk XVI 21-D



The model is finished as TB476, 21-D 'Ladykiller', flown by Sqn Ldr A Sager, DFC, CO of No 443 'Hornet' Squadron RCAF, based at Diepholz, Germany in April 1945. It is finished in the Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey under surfaces. The spinner is black and there is no Sky fuselage band – common to most single-engined RAF fighters operating in 2 TAF in 1945.

The aircraft carries National marking III roundels in all six positions. The roundels and serial number are Xtradecal, stencilling is AeroMaster and the codes 21-D are from the Watermark 'Canadian Spitfires' sheet 48003 with the name 'Ladykiller' hand painted on. The lowback

LF XVIe is the ICM 'Aircraft of the Aces' Spitfire LF XVIe kit, built virtually straight out of the box by Pete. The only additional work carried out was scribing the leading edge fuel tanks and some additional access panels, replacing the pilot's seat with the resin one we moulded, adding straps and replacing the mainwheels with ones from True Details.

The aircraft is finished as RK897, 3W-C, flown by Sqn Ldr Van der Stok, commander of No 322 'Dutch' Squadron RAF. Pete decided to portray this aircraft due to Sqn Ldr Van der Stok's history. He was one of only three of the seventy-six escapees who made a 'home run' during the Great Escape on the night of 24 March 1944, following which the Gestapo murdered fifty of the recaptured escapees.

It is finished in the Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey under surfaces. The spinner is black and the Sky rear fuselage band is partially painted out. The aircraft carries National marking III roundels above the wings and on the fuselage sides with National marking II roundels under the wings.

The roundels and serials are Xtradecal, stencilling is AeroMaster and the codes 3W-C are from the ICM sheet supplied with the kit. The codes are white, not Sky, but I fig-

ured ICM had done some research, as all the code letters in their other Spitfire kits are a good rendition of Sky.

Vickers Supermarine Type 389 Spitfire PR.XIX

The PR.XIX was the only Griffon powered PR version of the Spitfire. The need for a Griffon powered PR version of the Spitfire came about because PR Spitfires were having to fly at higher altitudes than initially envisaged to avoid being intercepted by German fighters. Altitudes over 40,000 ft could only be practically achieved with the Griffon engine, hence the PR.XIX.

The PR.XIX was essentially a Mk XIV with PR.XI wings which were fitted with the larger radiators required for cooling the Griffon engine. The fuselage was modified to accept the following camera installations. 2 x F52 36in fanned vertical or, 1 x F52 vertical or, 2 x F52 20in fanned vertical or, 2 x F8 20in fanned vertical and finally 2 x F24 14in vertical and 1 x F24 14in or 8in port facing oblique.

6b. Mk XVI 3W-C



7. PR XIX Z



7: Modelling the Spitfire PR.XIX

The PR.XIX kit started out life as the Hobbycraft Spitfire Mk XIV 'Pacific Theatre', and was made by Dave. The wings had the cannon blisters removed, various panel lines filled and then the wing was rescribed to represent the PR.XIX wing. The fuel pump blisters were added under each wing, made by cutting a piece out of 1/72 Martel missiles from the Frog Buccaneer!

The fuselage had to be totally rescribed, as it was devoid of any surface detail, raised or engraved, aft of the engine cowling. The camera ports were drilled out and discs of plastic card were stuck behind the holes, then painted gloss black and 'glazed' with clear gloss varnish. Dave made this model some time ago and the method of producing camera ports on the PR.XI featured earlier in this article, look much better.

Various intake and exhaust fairings were added along the fuselage, made from Contrail plastic rod, and the whip and Beam Approach aerials were added. The exhausts were also opened out

and I used the Aeroclub vacform windscreen and canopy hood.

The aircraft is finished as RM643, 'Z' of No 541 Sqn, based at RAF Benson, circa summer 1944. It wears the overall PRU Blue scheme and carries full AEAF, 18 inch wide, black and white, 'Invasion Stripes'. The

Red/Blue roundels, serial number and code letter were from Modeldecal.

Vickers Supermarine Spitfire F Mk 22

The Spitfire Mk 22 was essentially the final development of the Spitfire family and if placed next to a Mk I they look like totally different aircraft. The most obvious external differences between the Mk 22 and other Griffon powered Spitfires with cutdown rear fuselages, are the totally new wing with larger fin, rudder, tailplane and elevators.

The redesigned wing, was stronger, capable of carrying more fuel, totalling 39.5 gallons, and was armed with four Hispano 20mm cannon, (two per wing). This type of wing was first fitted to the Spitfire Mk 21 which was developed in parallel with the Mk 22.

The Spitfire Mk 22 did not see service in World War Two and most F.22s were issued to Royal Auxiliary Air Force squadrons, who continued to fly them into the early 1950s.

8: Modelling the Spitfire Mk 22

The Mk 22 is the Airfix kit, built straight out of the box by Dave, except for seat straps and the No 603 Squadron checks, which were 'home made'. Most references quote 603 Squadron's checks as being dark blue/light blue, which makes the ones supplied in the Airfix kit wrong!

It is finished as PK433, 'Q' of No 603 'City of Edinburgh' Squadron, RAuxAF based at RAF Turnhouse, circa 1950, in an overall painted Aluminium (silver) scheme.

General modelling notes

All the models were sprayed with a Pasch type 'H' airbrush that we have had for about 30 years! We use Xtracolour enamel for the external colours which is matt varnished after the application of decals with Poly S acrylic, (AeroMaster acrylic). We use Poly S acrylic for the interior colours.

Our models receive very little weathering and it is worth remembering that Spitfires where sometimes polished to gain extra speed, so an over-weathered Spitfire is probably less realistic than one with no weathering. This is just a personal opinion.

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8. Mk 22 Q



Spitfire Parade 2

Len Thompson looks at the Spitfire kits on offer in 1/72 scale

The Spitfire – probably the most famous British aircraft of World War Two; graceful and pretty almost beyond belief. Along with the Mustang and Bf 109, Reginald Mitchell's famous little fighter is recognisable to virtually everyone with a passing interest in aircraft. The basic airframe ran to some 24 Marks including Seafire variants – and this does not include the variations in wing type, engine type and the PR versions! Add that little lot to the mix, and we have a myriad of combinations.

- Windscreen: unarmoured; external armour; internal armour; PR curved; Seafire curved
- Canopy: flat sides and top; flat sides with curved top; fully blown, (two types); PR type; Lobelle hood; 360° teardrop.
- Fin: original/early style; broader Mk XIV style; Spiteful style.
- Rudder: original rounded; broad chord pointed; Mk XIV type; Mk XVIII type; Spiteful type.
- Tailplane/elevators: Original horn balance;

(or four) 20mm cannon and four 0.303 machine guns); 'e' wing, (two 20mm cannon and two 0.5 inch machine guns.

- Wingtips: normal elliptical tips, 'clipped' tips, (at least three variations); long span extended tips; PR 'bowser', with and without leading edge fuel tanks; late shape, (Mk 21 onwards).
- Ailerons: fabric; metal; short span.
- Tailwheel: fixed; retractable.
- Main undercarriage: five-indent hubs; four-indent hubs; three-indent hubs; plain disc hub; legs: with or without torque links; strengthened legs on later versions

Those are just *some* of the main external differences which may be seen on a Spitfire. We could go further and mention such items as the fuel cooler, gun camera, Coffman starter bulge, aerial fit, the various stores and fuel tanks carried externally, the bulges on the cowl-ing top, undercarriage indicators, bulges on wings etc, etc. Then we could start on the various PR types...

As previously stated, the main thrust of this article is to compare the various 1/72 scale kits, and not to get bogged down in too much detail, but maybe I have already...?

On to the models...



How it all began, the Prototype Spitfire K5054, modelled from the Hasegawa Mk I kit

However, it is not the intention of this article to describe all of these. I have examined the majority of the mainstream, (and not so mainstream), kits, which are available today in 1/72 scale, and have pointed out the advantages and disadvantages of each. Hopefully, with this information, the modeller can decide which kit suits each Mark best, and of course which method of modelling a particular Mark suits his pocket. I have not made too much reference to aftermarket conversion sets, (in resin, brass and vacform – and there are an awful lot of them!), trying instead to stay with injection-moulded models.

A Very Brief Overview

Of the many different Marks of Spitfire, the following variations in shape or detail could be found:

- Engine/nose: short Merlin, long Merlin, short Griffon, long Griffon
- Exhausts: Three-manifold Merlin, (several variations); six manifold Merlin, (fishtail and rounded); Griffon, (fishtail and rounded)
- Propeller: Two-blade wooden; three-blade Merlin (metal and compressed wood varieties); four-blade Merlin; four-blade Griffon; five-blade; six-blade contra-rotating propeller

double angle horn balance; Spiteful type.

- Carburettor intake: original style, (Mks I to VI); Aboukir tropical filter, (various styles); Vokes tropical filter; truncated Mk VII and very early Mk IX; early Mk IX; Mk VIII/late Mk IX



Early Spitfire Mk I from the Airfix kit



Aero Vee; truncated Mk XII; standard Griffon-engine style, Seafire FR 47 style

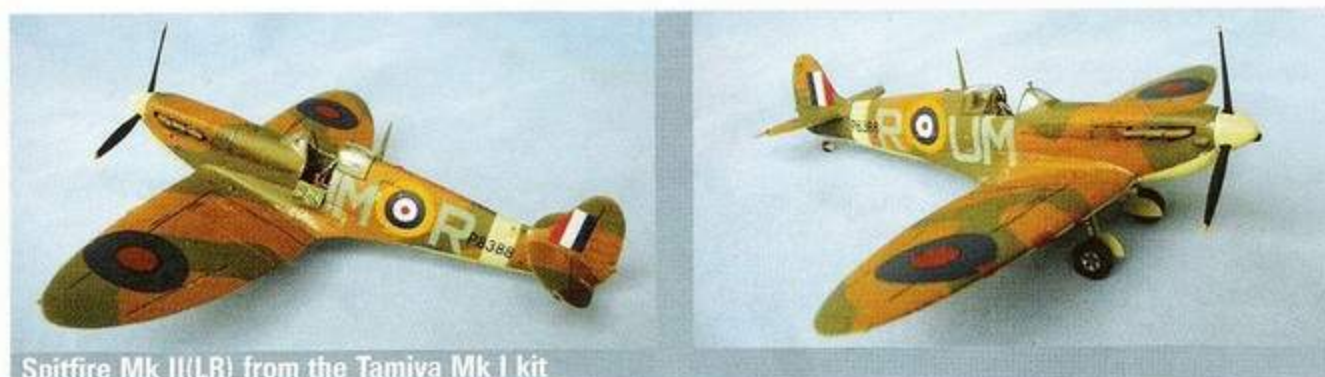
- Oil Cooler: Mk I/II type; Mk V and Mk XII; Seafire Mk I, II and III.
- Radiators: single: Mks I to VI, Mk XII and Seafire Mks I, II and III; twin: Mks VII to XVI: early Griffon engine type (Spitfire Mk XIV and Seafire XV); twin: late Griffon type
- Wing armament: 'a' wing, (eight 0.303 machine guns); 'b' wing, (two 20mm cannon and four 0.303 machine guns); 'c' wing, (two

The kits

In this section, I will describe the majority of the 1/72 scale kits that are available at the moment. Some may be a little harder to find than others, but a little searching should come up with the majority. I have tried to point out the salient points, along with advantages and disadvantages of each kit. The photographs will provide a visual indication of shapes etc. I have not commented too much on interior detail, (or the lack of it!), as I consider this an exercise in examining the best way to model a particular Spitfire Mark.

Airfix Spitfire Mk Ia:

Raised panel lines; very accurate fuselage shape; good bulges over rocker covers; panel lines a little too heavy around engine; nice early metal propeller and short de Havilland spinner; early bulged canopy, moulded thickly; very accurate 'a' wing armament; normal span wingtips, good shape and thickness; no fabric



Spitfire Mk II(LR) from the Tamiya Mk I kit

effect on ailerons; wing thickness good; good gull wing underside centre section; bulges over undercarriage are indistinct; undercarriage legs moulded to mainwheel doors, (a poor feature); open mainwheel bays; five-indent hubs; no wingtip lights; radiator poorly moulded but a decent shape; no vents on wing under surface for gun heating system; tailplane shape good. Cheap and readily available. Makes an excellent Mk I.

Hasegawa Spitfire Mk Ia:

Raised panel lines; fuselage shape is good, but rocker cover bulges could be more defined; choice of Watts two blade propeller or Rotol three blade propeller and spinner; choice of flat and raised early canopies but moulded a little thickly; 'a' wing armament; normal span, shape accurate; no gull wing effect; fabric



Spitfire PR Mk IV with Aboukir filter from the Tamiya Mk Vb kit

effect on all control surfaces a little overdone; reinforcing strips moulded over wheel bays; mainwheel bays open; undercarriage legs too thin and undercarriage is too widely spaced; four indent hubs; radiator is too square and oil cooler wrong shape; tailplane shape good. Recently back on the market.

Tamiya Spitfire Mk Ia:

Excellent scribed panel lines; fuselage shape is good but over 1mm short behind cockpit; good three-blade de Havilland propeller and spinner; fabric on rudder a little overdone; windscreen is poorly shaped and seems to be at the wrong angle; 'a' wing armament; normal span shape is reasonable but leading edge curve is incorrect in that it starts at the root rather than on the aircraft centre line; nice gull wing effect; thickness good; fabric ailerons; good undercarriage bulges and gun vents, (note, guns are moulded with the flash eliminators protruding from the leading edge which is only correct for very early Mk Is); undercarriage and bays excellent; very nice five-indent wheel hubs; radiator and oil cooler very good; tailplane shape good. Readily available, but rather expensive.

Revell Spitfire Mk Vb:

Excellent scribed panel lines, (note, some early mouldings lacked the scribing for cockpit



'Clipped, clapped and cropped' Spitfire Mk Vb from the Revell Vb kit



Spitfire Mk II(ASR) from the Airfix Mk I

hatch); propeller blades are a little anaemic; cowlings a little flat on top; exhausts suffer from moulding flaws; rear fuselage 2mm short; spine shape is incorrect, (too deep in front of fin and not enough curve behind canopy); 'b' wing armament; choice of normal or 'clipped' wingtips, shape is good; nice separately moulded gun bulges; good undercarriage



bulges; mainwheel bays too shallow with sloping sides; good undercarriage legs; five-indent wheel hubs are a little thin in cross section; radiator is incorrect being a little too long and with too sloping sides; oil cooler does not have distinctive circular front; tailplane shape is a little too pointed; access hatches incorrectly moulded on both surfaces; no elevator trim tab



Spitfire Mk Vc (Trop) modified from the Revell Mk Vb kit

actuators. A good try, but the fuselage shape problems are a little too pronounced for my liking. Can be worked on! Cheap and readily available

Tamiya Spitfire Mk Vb:

Fuselage mould is the same as the Mk I, so the previous comments apply; choice of normal, Aboukir and Vokes tropical filters; 'b' wing armament; 'clipped' and normal span wingtips; excellent gun bulges and vents,; choice of four-



indent or plain hubs. Probably the best Spitfire Vb in 1/72, but again, expensive.

Airfix Spitfire Mk Vb:

Fuselage mould is based on the Mk I so the preceding comments apply; 'b' wing armament; normal span wings, again of excellent shape and thickness; upper aileron hinge line is in the wrong place and needs filling and rescribing; strange 'kink' to wing upper surface near fuselage joint; wheel bulges indistinct; gun bulges are okay but could be more defined, no gun vents; radiator as Mk I; oil cooler is good, otherwise as Mk I. Cheap and readily available, makes a decent Mk Vb with a little work.

Airfix Spitfire Mk Vc:

This is an update of the Mk Vb detailed above. New parts have been included for the 'c' wing armament and a Vokes tropical filter. The fuselage mould is based on the Mk I so again the preceding comments apply. Normal span wings are again of an excellent shape but are much too thick, especially at the trailing edges; metal ailerons; gun bulges are moulded separately and the choice of narrow and broad blisters is given; radiator as Mk I and circular oil



cooler is good; optional long and short cannon barrels; boxed-in mainwheel wells; nicely shaped Vokes tropical filter. Cheap and readily available, makes a decent Mk Vc with a little work on the wings. The main problem here is that the fuselage, (being an old mould), although of excellent shape, has raised panel lines whilst the wing, which will need thinning considerably even to fit the old parts, has scribed panel lines.

Heller Spitfire Mk Vb:

Raised panel lines; fuselage shape is fair, but not enough bulge over rocker covers; choice of Vokes tropical filter or standard carburettor intake; small bulges on cowlings top are incorrect; rudder shape incorrect; 'b' wing with clipped and normal span tips - shape is okay but a little short in span; no gull wing feature; aileron hinge line is too wide by 2mm inboard; fabric effect on all control surfaces is overdone and incorrect for the ailerons;



Seafire Mk II from the Airfix Mk Vb kit



Seafire Mk III from the Revell Mk Vb kit

mainwheel bays open; gun blisters are poorly shaped; no gun vents; radiator is poorly shaped and oil cooler is of Mk I style with 'D-shaped' intake. Now harder to find, but overtaken by more up-to-date kits.

Smer Spitfire Mk Vb:

This is the Heller kit as described above. Also has been released as a Spitfire VI with resin extended wing tips and four-blade propeller, which are nice. Not the best way to make an accurate Spitfire HF Mk VI though.

Italeri Spitfire Mk Vb:

Deeply scribed panel lines; fuselage is 1mm short behind cockpit; cowling moulded separately making a difficult joint and is 1mm short; incorrect small bulges on cowling top; decent spinners, choice of Rotol blunt and pointed, but poorly represented propellers; choice of normal, Vokes and Aboukir filters; choice of two styles of canopy which are nicely shaped; no battery compartment hatch; fin leading edge is not quite right; no rudder actuator and rudder is slightly too narrow in chord and short in length; 'b' wing armament, wing shape is passable but too much curve on trailing edge; choice of normal or 'clipped' tips; no definition of wing to fuselage fairing; gun bulges are okay, but bulges over undercarriage indistinct;

gull wing; optional narrow and broad 20mm cannon blisters; good radiator and oil cooler; mainwheel wells boxed in; choice of solid or four-indent mainwheel hubs; six-manifold exhausts; correct style oil cooler and two vacuum canopies. Can be made to look good with some work – if you can find it!



Airfix Spitfire Mk IXc:

Oh dear! This kit originally dates back to the early 1950s and shows it. Bears a passing resemblance to the Spitfire, but time it was honourably retired. Is readily available but best avoided.

Hasegawa Spitfire Mk VII, VIII and IXc:

These three kits share a common mould, with optional parts according to each variant. Excellent scribed panel lines; fuselage shape

with the deepened rear fixed part for the Mk VII; choice of original rounded or broad chord pointed rudder, both of which are good; retractable or fixed tailwheel; 'c' wing armament; normal, extended or 'clipped' wingtips, (again dependant on boxing), shape is excellent; leading edge wing fuel tanks need scribing for Mk VII and VIII; good gull wing feature; ailerons feature scribed lines for both long and short span style; cannon bulges are the late, narrow style; bulges over mainwheel wells are only a feature of post-war modified Mk IX/XVIs and should be removed for all others; radiators are well shaped but a little shallow; undercarriage bays are also too shallow; undercarriage is very good with four-indent mainwheel hubs, tailplanes are good with later style horn balance. Availability is reasonable, (especially



the Mk VIII), and one of the best long-nosed Merlin Spitfire models available.

Italeri Spitfire Mk IXc:

This kit shares parts, (the rear fuselage, undercarriage, tail etc), with the Mk Vb available from the same manufacturer; slightly too deep scribed panel lines; lacks any representation of the wing/fuselage fairing; nose is 2mm too short; propellers badly represented; rear fuselage shape is as in Mk V kit, ie no battery compartment hatch or rudder actuator; choice of rounded or broad chord pointed rudder, both of which are too narrow and short in length; 'c' wing armament with normal span tips, which has too much curve on the leading edge; cannon blisters are wrong shape; post-war 'teardrop' bulges over undercarriage bays are represented by scribed lines; cannon barrels and stubs are poorly represented; radiators are very badly done with wrong shape and sloping sides; under surface of wing has scribing for leading edge fuel tank – incorrect for a Mk IX; undercarriage is the same as that in the Mk V kit and similar comments apply; dope patches over machine gun ports are again represented by raised mouldings; cartridge case ejector slots incorrectly represented; tailplane shape is good. Although cheap and readily available, this kit is a big disappointment. Not really recommended for the ultimate Mk IX.



Spitfire HF Mk VI made from the Tamiya Vb kit, (note the long span wings)



Spitfire HF Mk VII made from the Hasegawa kit

gun vents are too big, cannon barrels are too short and doped patches over outer machine gun ports are moulded as raised features and should be removed; undercarriage bays too shallow; undercarriage has poor legs; four-indent hubs are poorly done; nice gull wing effect; tail shape is good. In my opinion makes a poor model of a Spitfire Mk Vb, but it is cheap and readily available.

Octopus Seafire Mk III:

Excellent scribed panel lines which include all the Seafire details; decent shaped fuselage although the nose is approx 1mm short; the rear fuselage is a little too deep in front of the fin and lacks the gentle curve from canopy to fin leading edge; rudder is a little too pointed; reasonable spinner and four-blade propeller; 'c' wing armament; normal span wingtips of good shape and thickness, but with a far too shallow





Spitfire HF Mk VIII from the Hasegawa kit



Ventura Spitfire Mk VIII/IXc:

This is a limited-run injection moulded kit with very nicely scribed panel lines; shape is 'spot-on' in all respects; cowling features the Coffman starter bulge and the Aero Vee universal carburettor intake seen on Mk VIIIs and mid to late production IXs; excellent propeller blades and spinner; integrally moulded broad chord pointed rudder but with optional choice of the early rounded style; 'c' wing armament with standard elliptical tips, shape is excellent; integrally moulded broad cannon bulges, (with separate inserts for the later, narrow style); good radiators; undercarriage is very 'softly-moulded', with four-indent mainwheel hubs; tailplanes are just right. This is without a doubt the best option for a 60-series Merlin Spitfire model, however, due to the limited run nature of the moulding, it does take some building. Hard to find these days.

KP, (aka KoPro) Spitfire Mk IXc:

Raised panel lines; shape is okay with a slightly exaggerated bulge to cowling top, but the only 1/72 scale kit to feature this; fuselage is 1mm short and 1mm too deep aft of cockpit; propeller and spinner is poor; optional rounded and broad chord pointed rudder; 'e' wing arma-

ment with normal, 'clipped' and extended wing tips – wing shape is not bad, but seems to be a little too wide in chord at the trailing edge; poor gull wing effect; gun bulges are separate and feature both narrow and broad style; bomb rack and bombs included; undercarriage bays open; radiators are very badly shaped; undercarriage is poor; tailplanes are of good shape but the elevators have no trim tabs or actuators. Not a bad effort, but overtaken by the Hasegawa kit. Becoming available again and cheap.



An early Spitfire Mk IXc, (from a Mk Vc airframe – note the bulges on the cowling), from the Hasegawa kit

ft of cockpit; bulges over rocker covers could be slightly more pronounced; nice rendition of the deepened chin; no scribing for cockpit access hatch; thinly moulded PR canopy with curved windscreen; nice four-blade propeller and good spinner; choice of standard and Aero Vee universal carburettor intakes in resin; nice resin exhausts; choice of round or broad chord



pointed rudder – both of nice shape; nice representation of the 'bowser' PR wings, with good shape and thickness, with normal elliptical wing tips but no wing tip navigation lights; fuel pump bulges moulded correctly; good gull wing feature; radiators are excellent in shape and of the correct depth; undercarriage bays are open; undercarriage is nice after cleaning

aileron are correct for Mk XIV only; separate bulges for cannon and for fuel pumps under wing (for PR XIX); enclosed undercarriage bays with good undercarriage; separate torque links for u/c legs; good four-indent mainwheel hubs; radiators are good with grille matrixes nicely recessed into wing surface; radiator flaps too short; fin/rudder shape is good. This is a great kit which unfortunately tries to be 'jack of all trades'. Whatever version is modelled, some work will be needed to remove the features of the one not chosen. Becoming sporadic in availability, but the best option for a long-nose Griffon Spitfire.



Spitfire Mk IX from the Hasegawa kit



ment with normal, 'clipped' and extended wing tips – wing shape is not bad, but seems to be a little too wide in chord at the trailing edge; poor gull wing effect; gun bulges are separate and feature both narrow and broad style; bomb rack and bombs included; undercarriage bays open; radiators are very badly shaped; undercarriage is poor; tailplanes are of good shape but the elevators have no trim tabs or actuators. Not a bad effort, but overtaken by the Hasegawa kit. Becoming available again and cheap.

up with good, four-indent mainwheel hubs; tailplanes are of good shape. Sometimes hard to find, being limited-run, but the best starting point for the 60-series Merlin engined PR Spitfires.

Fujimi Spitfire Mk XIV/XIX:

In the same manner as Hasegawa, (with their VII/VIII/IX), these kits share a common mould. Excellent scribed panel lines, (although some parts, strangely feature heavier lines, as if

Academy Spitfire Mk XIV:

Good quality scribed panel lines; top line of cowling is too curved; top line behind canopy is too bulky by about 1mm and fuselage is 2mm short behind cockpit – these features make the whole fuselage look too fat and a little misshapen; exhausts are moulded as rounded type but are much too thin; separately moulded rocker cover bulges are a nice feature but are 2mm short at rear; top line of rudder is incorrect; 'c' wing armament; normal span wings have the trailing edge curve incorrect at the ailerons; short span ailerons have incorrect hinge line on under surface; the flap line is incorrect resulting in the flaps being too narrow in chord; gull wing feature is a little shallow;

Special Hobby Spitfire PR Mk X:

This is the MPM kit, (see below), with dedicated parts for the rarely seen PR.X. Resin Marshall cabin blower intake; two vacform canopies with internally armoured windscreen. Other details as below.

MPM Spitfire PR Mk XI:

A 'limited-run' kit with scribed panel lines; fuselage is slightly too high and 1.5mm short



Spitfire PR Mk XI from the MPM kit



▶ wingtip lights are too big and slightly too far outboard; leading edge fuel tanks are correctly scribed; cannon bulges are too short; undercarriage bays are enclosed; legs are good if a little 'chunky' in detail; mainwheels are too thick; radiators are very poorly moulded with sides perpendicular to ground line rather than the wing undersurface, (the worst feature of the kit!); tailplane shape is good. Readily available and cheap, this is a reasonable effort let down by overall fuselage shape and those radiators.

Heller Spitfire Mk XVI:

One of the few kits to come with low back fuselage and 360° bubble canopy; features raised panel lines; shape is reasonable but the undernose contours appear slightly too curved; good propeller and spinner; choice of 'fishtail' or 'circular exhausts'; rear fuselage is too deep in front of fin; leading edge of rudder is slightly



Spitfire Mk XII built using the Brigade Models conversion set

good shape but too shallow, (like Mk IX type); fin shape is okay. Another kit that is hard to find, but the only kit to feature this Mark of Spitfire from the box. A better Spitfire Mk XVIII can be made from the Fujimi kit.

MPM Spitfire PR Mk XIX:

Again a limited-run kit with nicely scribed panel lines; bulges over rocker covers could be



good; undercarriage bays are open; undercarriage legs are lacking in detail but feature resin torque links. A good basis for a PR.XIX, but becoming a little hard to find.

Eduard Spitfire F.21:

Limited run kit originally moulded by Aeroteam, re issued by Eduard under their Profi Pack series; includes etched brass and resin parts; scribed panel lines; fuselage shape is very good; choice of five-blade, or six blade contra rotating propeller, although the spinner for the contra prop is too long; choice of 'fishtail' or 'tubular' exhausts which are poorly moulded; no radio compartment hatch moulded; fin shape is very good; wings are of good shape if a little too thick; twin cannon bulges are nicely rendered as are the bulges over the undercarriage; mainwheel bays are enclosed but lacking in detail; undercarriage legs lack



Ginger Lacey's Spitfire Mk XIVc made from the Fujimi kit

'off'; 'e' wing armament; wings with integrally-moulded 'clipped' tips, wing shape is okay if a little too curved on leading edge; gun bay hatches rather too deeply scribed; post-war bulges over undercarriage moulded-in; undercarriage bays closed-off but too shallow; undercarriage legs are okay; three-indent mainwheel hubs; radiators are a little too square in shape and too deep by about 1.5mm, (looking more like the Griffon engine type); tailplane



Seafire Mk XV made from the Academy Spitfire Mk XIV – note the overly deep fuselage



An early Spitfire Mk XVI made from the Hasegawa kit

shape is okay but too wide. Available quite cheaply, this kit was at one time considered the best 60-series Merlin-engined Spitfire kits. Now the Hasegawa kit has overtaken it.

MPM Spitfire Mk XVIII:

Limited-run kit with scribed panel lines; nose has exaggerated downward curve on top of the cowl, resulting in overly pronounced downthrust line for the engine and propeller; cowl rocker bulges look okay; rear fuselage shape is okay; rudder is the correct broad chord size of that found on the Spitfire FR XVIII, but lacks the split trim tab; 'e' wings armament; wings are of good shape if a little thin, with normal span tips; no wingtip navigation lights; cannon bulges are slightly wrongly shaped; indistinct gull wing feature; undercarriage bays open; legs and wheels are okay; radiators are

a little more defined on top of the cowl, but are probably this way due to moulding limitations; nice propeller and spinner; exhausts are nicely moulded – in resin; vacformed canopy with correctly rounded windscreen; rear fuselage shape is good; wing mouldings are the same as that found in the MPM PR.XI kit and feature the PR 'bowser' wing; radiators are

refinement; three-indent mainwheel hubs – wheels moulded in halves; radiators correctly represent the deeper variety seen on these later Marks. Becoming hard to find and a little pricey, due to the inclusion of the brass and resin, this is a good kit for the later Marks with the final wing shape.

Other Kits

There are other kits that have been on the market at various times from the same and other manufacturers, which I do not have much experience of. These include Frog – Mk I, VIII and Mk XIV; Revell – Mk I; Matchbox – Mk IX/XVI; Heller – Mk I; PM – Mk V Floatplane; and Ventura. Some of these are long out of production. The Ventura kits feature a wide range of both long-nosed Merlin and Griffon versions. They are limited-run kits, which are



Bubble top Spitfire Mk XVI made from the Hasegawa kit





Spitfire Mk XVIII made from the Fujimi kit



Spitfire PR Mk XIX made from the Fujimi kit

harder to find, but are to be recommended. They feature scribed panel lines and excellent shapes, (probably the best of all in terms of fuselages). If you can find them, and can take the extra work needed in assembly, snap them up!

There have also been resin kits from Czech-Master recently, featuring the Merlin and Griffon engined Seafires, which look very good in the packaging. I have built, (but not finished!),



Spitfire F.22 made from the Eduard kit



the Seafire 17 and this is very good. Being entirely resin, I have not included too much detail here, concentrating on the injection-moulded polystyrene kits. High Planes have also released a limited-run injected polystyrene Seafire, but I have not yet seen this kit.

The Aftermarket

The Spitfire has been extremely well served for conversion sets and details, in resin, brass, vacform and injection moulded. Decal sheets abound. To list them all would try the patience of you and the editor! The quality can be variable but much of it is very useful. Look out for these manufacturers' products, (in no particular order), Aires, Airwaves, Aeroclub, Eduard, Falcon (great canopies!), True Details, CMK, Dutch Decals, AeroMaster, Xtradecal, Kits at War, etc etc etc...

The Models

I have included photos of some of my Spitfire models. All of these have detailed interiors, and in the majority of cases the kit-supplied canopies have been replaced with vacform items from Falcon. You will see that I have used a large variety of kits, and have modified these as necessary to show different Marks, colour schemes, markings etc. The models have been built over a period of years and are not perfect – I know where the mistakes are!

Summary

Is the perfect 1/72 scale Spitfire kit out there? I doubt it. The shape and form of this Classic is very distinctive, but at the same time quite hard to capture perfectly. The combination of subtle curves and straight lines conspire to make it an elusive shape to capture. Will the perfect 1/72 scale Spitfire kit ever exist? Well, we are getting closer with

modern tooling methods and the research that is being done.

Which kits would I recommend to make a range of Spitfires? It really depends on the

amount of work that the modeller is prepared to invest, the depth of his pocket and the availability of kits. This is my humble opinion, showing the first and sometimes second choices, (and remember, it is only my opinion!)

With unlimited time and resources, the full range of Spitfire Marks can be built in 1/72 scale. I have built most of them, (but not all – one day soon I hope!). Dependant on the modeller's skill and ability, (not to mention the thick-

ness of his wallet), I am sure that the ultimate Spitfire model could be achieved.

The combination of different Marks, together with the other variations mentioned above, and the plethora of different colour schemes, would ensure that the modeller could be occupied for many years!

Although I love to see accurate models, remember *it is a hobby*. I have Spitfire models in my cabinet from all sorts of sources, some right, some wrong, but the majority of folks would be very hard pressed to tell the difference between each. Just enjoy modelling the Spitfire – *you have to agree... it does look rather good!* **MAM**



Seafire FR.47 made from the Ventura kit



Recommended Kits

Mk I	Airfix for shape, Tamiya for detail
Mk II	As above (both suitably modified)
Mk V	Airfix for shape, (the original Vb – the Vc has poor wings), Tamiya for detail
Seafire I, II & III	Convert a suitable Mk V or the Octopus kit
Mk VI	Airfix or Tamiya suitably converted
Mk VII	Hasegawa (modified as necessary)
Mk VIII	Ventura, Hasegawa
Mk IX	Ventura, Hasegawa
Mk X	MPM
Mk XI	MPM
Mk XII	CMK, but could use a Mk V and conversion available from various sources (e.g. Brigade Models)
Mk XIII	A rare bird, convert a suitable Mk V
Mk XIV	Fujimi
Seafire XV	CMK or similar to Spitfire XII
Mk XVI	Hasegawa, Heller
Seafire XVII	CMK, similar to Seafire XV but with bubble canopy and low back fuselage
Mk XVIII	Fujimi with new rudder
Mk XIX	MPM or Fujimi
Mk 21	Eduard or Fujimi with aftermarket wings
Mk 22	As above, with low back fuselage, bubble canopy and new Spitfire type tail
Mk 24	As Mk 22
Seafire 45	As Mk 21, suitably modified
Seafire 46	As Seafire 46
Seafire 47	Ventura

Original painting for the
Spitfire Mk I/II box-top,
by John David Jones

New



Quarter Scale Spitfires!

Neil Robinson takes a first look at the new 1/48 scale Airfix Spitfire Mk I/II and Spitfire Mk IXc/XVIe

Airfix appear determined to add every Mark of Spitfire to their extensive product range – not that I'm complaining you understand! Their latest offerings are a pair of 1/48 scale Spitfire kits – and both from brand new toolings.

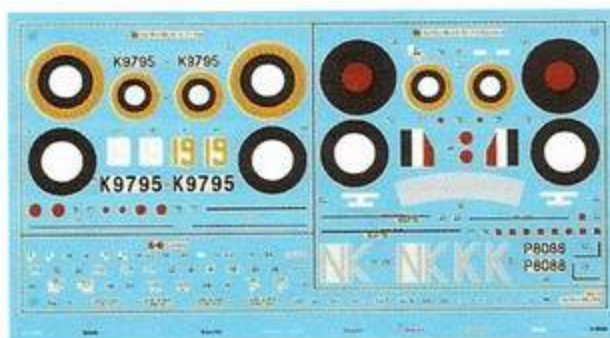
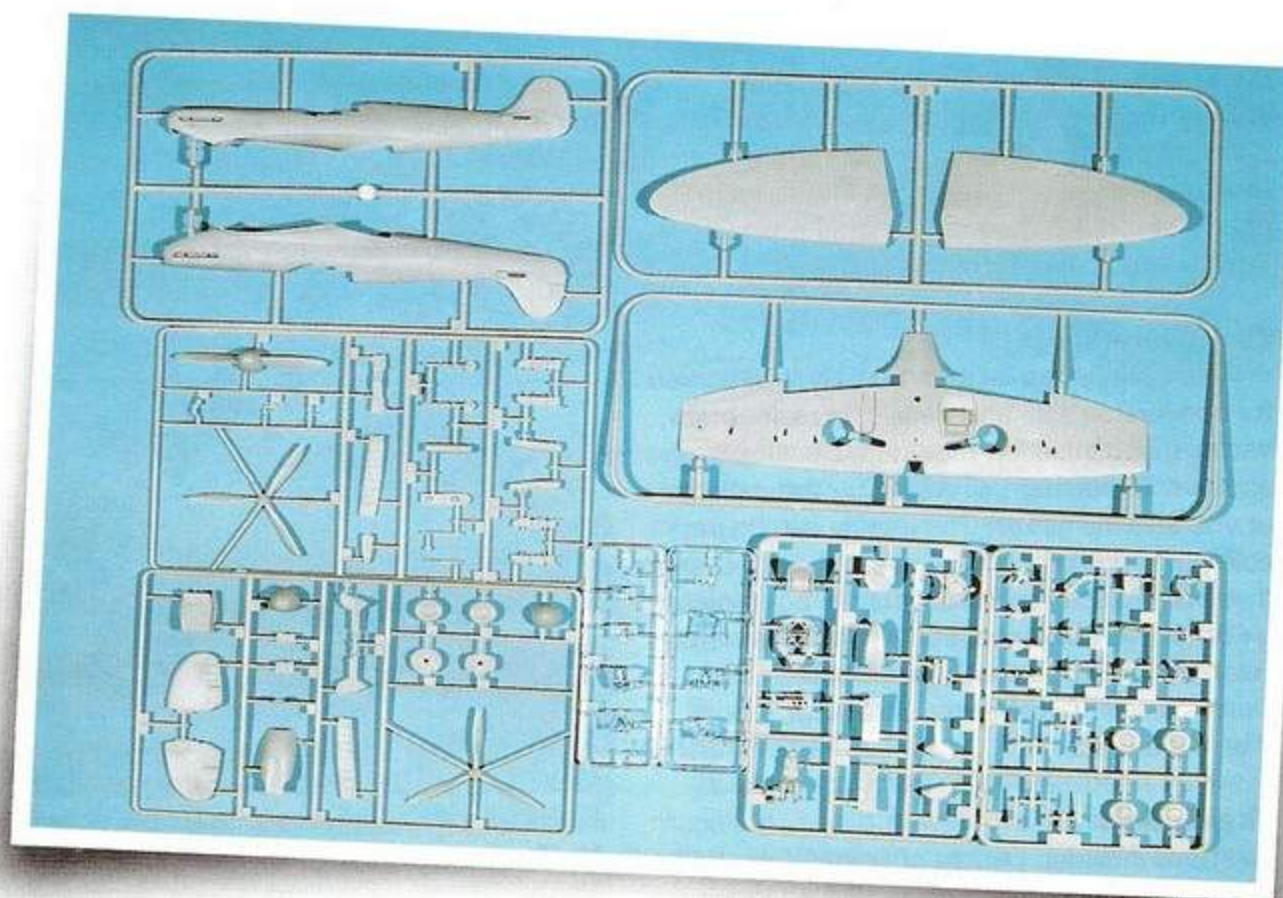
As you may have noticed, we do not normally feature specific reviews of new kits in *'Model Aircraft Monthly'*, (leaving that to our sister publication, *'Scale Aviation Modeller'*), preferring to include the good or bad aspects of a particular model as part of any main modelling article. However, as we were running features on the Spitfire to commemorate the type's 70th anniversary, and as I had the opportunity to build a pair of pre-release, test shot samples, it seemed churlish not to include them here!

Spitfire Mk I/II

Unfortunately, this kit will only be available in the *'Spitfire 70th Anniversary'* boxed set, (together with the new Mk IXc/XVI and the Mk 22/24), in a special presentation package – at least for the foreseeable future. It's something to do with Airfix's marketing strategy. I cannot understand it myself, *but then I don't understand Einstein's Theory of Relativity either...*

The kit is moulded in an easy to work with, pale grey plastic, with very nicely engraved panel lines. The rib detail on the ailerons is a little overdone, but can be reduced with some judicious sanding and is not overly noticeable under a coat of camouflage paint.

The flaps are also separate and can be fixed in the 'up' or 'down' positions, although



to be honest as soon as the real aircraft had landed the flaps were always flipped back 'up' again. Personally, I would have rather had separate elevators, as Spitfires are invariably seen with their elevators 'drooped'.

There are a number of optional parts in the

kit which will actually allow the construction of no fewer than FOUR variants – ie a very early Mk I; a mid/late Mk I; a Mk IIa; and a Mk Va – although there are only decal markings for two – an early pre-war Mk I and a mid-1941 Mk IIa, of which more later.

Two clear sprues are provided: one with a flat canopy hood and unarmoured windscreen, for the very early Mk I, plus an externally armoured windscreen, for the later Mk I/II. The other sprue, (which is also included in the Mk IXc/XVIe kit), features an internally armoured windscreen, a fully 'blown' domed canopy hood, and two rear canopy sections – a 'standard' one and a 'deeper' one suitable for a HF



Mk VIII! Unfortunately, no 'flat-sided' domed canopy hood is included, which is a shame as it was the type generally fitted to all Mk Is and IIs!

The kit actually includes three types of propeller blades and spinners – the Watts wooden two-blader, (for very early Mk Is); the 'blunt' Rotol spinner with Jablo compressed wood propeller blades, (fitted to late Mk Is and Mk IIs); and the de Havilland spinner with metal propeller blades, (fitted to mid-production Mk Is and some Mk IIs). The 'blunt' Rotol spinner appears a little too blunt and the de Havilland spinner doesn't appear pointed enough – but some judicious sanding might quickly rectify matters.

but being solid one-piece items these cannot be sanded down. This thick trailing edge 'syndrome' is something that Airfix are going to have to address if they want to stay in the enthusiast kit market place with their competitors, who all seem to be able to produce wafer thin trailing edges.

The cockpit entry door flap is also much too shallow and the 'kink' in the mid-fuselage panel line is missing. It's a shame about these points as the rest of the kit is rather nicely moulded.

There are two decal choices. One is the ninth production Spitfire Mk I, K9795, of No 19 Squadron, based at Duxford in October 1938. Colour scheme is Dark Earth and Dark Green upper surfaces with painted Aluminium undersides, with broad yellow-outlined roundels above the wings and on the fuselage sides. It

is now thought that the fuselage roundels of these early Spitfires were 39 inches in diameter, (and not 35 inches), which is reflected on the kit decal sheet as is also the 'sign-writer' style of fuselage and underwing serial number presentation – well spotted Airfix. As it is not certain whether the numeral '19' on the fin was white or yellow,

both colours have been included. They are printed by the dot matrix system, which when you look closely, shows up the 'dots' on some of the lighter colours, but they are commendably thin, are in register and go on without any problems.

The second decal choice is for Spitfire Mk IIa, P8088, NK•K, of No 118 Sqn, based at Ibsley in May 1941. Also finished in Dark Earth and Dark Green upper surfaces but this time the undersides are Sky. It is thought that the propeller spinner and rear fuselage Fighter Command band were painted in Sky Blue during this period, which again, is reflected in the kit painting instructions.

This is the scheme I opted to finish the review model in, using the blunt Rotol spinner and Jablo propeller blades parts. As the spinner appeared just a little *too* blunt, I sanded it to what I thought was a more accurate shape. I also 'drooped' the elevators and offset the tail-wheel for a little personal animation.

Spitfire Mk IXc/XVIe

The new Mk IXc/XVIe is available as an individually boxed kit, (as well as also being in the 'Spitfire 70th Anniversary' boxed set), and if you thought there was a big box full of bits in the Mk I/II kit, there's even more in this one!

Again, moulded in pale grey plastic with

finely engraved panel lines, basically, Airfix have moulded a completely new Mk IX fuselage and late pattern 'universal' wings, (with the appropriate twin radiator layout), 'straight' Merlin 70, and 'curved' Packard Merlin, cowl-ing top engine panels; enlarged elevator horn balance tailplanes; separate 'standard' and 'broad chord' rudders, both with rounded rudder leading edges which slot into the fin's concaved trailing edge for a more realistic fit; and separate flaps.

In case you're wondering, (what with the ghosts of the Hasegawa Spitfire Mk IX's length hovering in the background), the fuselage length looks spot-on! In fact the whole model looks dimensionally accurate – thank goodness!

Also included in the box are the recently retooled Spitfire Mk Vc/Seafire Mk III upper and lower wing half sprues; plus separate 'clipped', 'standard' and 'long span extended' wing tips; 'broad' and 'narrow' 'c' wing cannon blisters and 'e' wing cannon blisters; short and long 20mm cannon barrels; 'solid' and four-indent hub mainwheels; standard 'fixed' and 'retractable' tailwheels; separate Aero-Vee 'Universal' carburettor intake; two styles of four-blade propeller and six-stack exhaust manifolds!

All this provides a *really* multi-optional kit, which with the new clear transparency sprue mentioned earlier, (featuring an internally armoured windscreen, a 'blown' canopy hood and the two rear canopy sections), will allow the modeller to produce any number of Spitfire Mark permutations, from a Spitfire HF

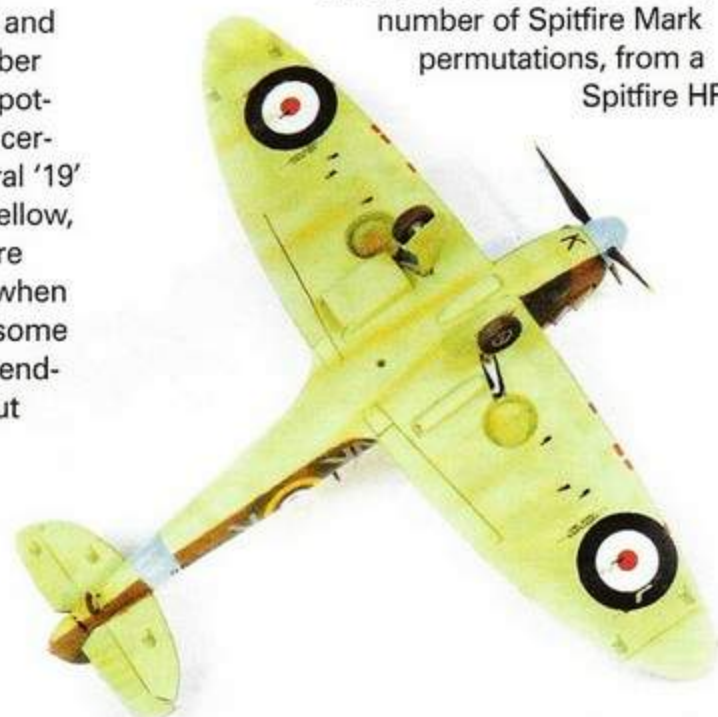


Other optional parts include a manual hand pump lever

for the main undercarriage retraction and 'pole' type aerial mast for the very early Mk I, although the one significant item missed off for the very early Mk I is the original, 'fork-prong' pitot under the port wing. Also included are 'circular' and 'fishtail' exhaust manifolds; rectangular rear view mirror; Coffman starter bulge; and parts for both the Mk I/II's 'D-shaped' oil cooler and the fully circular oil cooler which can be used to produce a Mk Va if wished!

This kit also shares another two sprues with the Mk IXc/XVIe kit – from which most of the cockpit interior parts are to be taken. These cockpit interior parts look a little basic at first sight, but once painted up and installed they do the job admirably.

Construction-wise the kit fits together without any problems, but...! The mainplanes look too deep in section, causing the trailing edges, especially where the separate flaps fit, to be much too thick. Some careful sanding, 'vac-form style', on the mating faces of the upper and under surface halves, (which in the process will eradicate the overscale flap roof rib detail), will help. Similarly thick trailing edges apply to the elevators and the rudder,



Mk VII, through LF and HF Mk VIIIs, to early, mid and late series Mk IXs!

Unfortunately the overly deep wing and thick trailing edges 'syndrome' is also present in this kit, a problem somehow exacerbated by the inclusion of separate flaps. All the cannon 'blister' fairings also need sanding down as they stand too proud, but overall, Airfix have again made a good job of the kit.

There are three decal options this time. A Mk IXc, MH434, coded ZD•B of No 222 Sqn circa mid-1944, (which is still flying today with the Old Flying Machine Company based at Duxford); another Mk IXc, MH552 coded 'R' of No 73 Sqn, based at Brindisi, Italy in early 1945; and a 'high-back' Castle Bromwich-built Mk XVIe, SM309, coded AU•H of No 421 Sqn RCAF, based at B.154 (Reinshlen), Ger- ▶

► many, in May 1945.

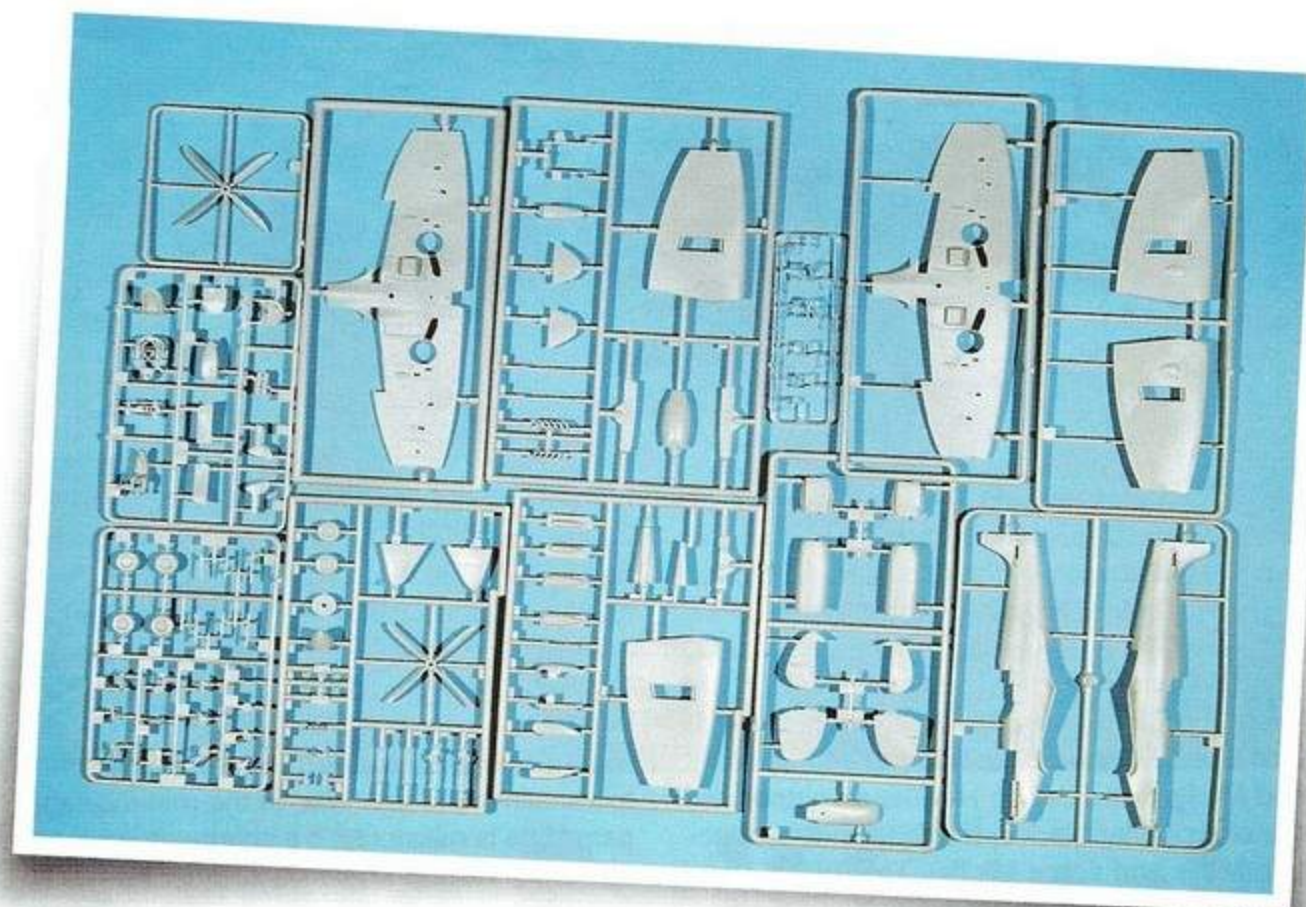
The review model was finished as MH434, ZD-B, as she looked in early 1944. Colour scheme was the standard Day Fighter Scheme of Ocean Grey and Dark Green upper surfaces with Medium Sea Grey undersides; Sky spinner and rear fuselage band; and yellow wing leading edges.

The new Mk IX/XVI wing upper surface halves have the post-war, tyre clearance, bulges integrally moulded in, so I did a bit of 'in-box cross-kitting', and mated the Mk Vc/Seafire Mk III wing upper surface halves to the Mk IX/XVI one-piece lower wing half, which avoided me having to sand the tyre clearance bulges off but created another problem!

The chord of the Mk Vc/Seafire III wing halves is ever so slightly broader than the chord of the Mk IX/XVI wing halves which caused a slight 'step' on the aileron undersides. The 'step' was filled with superglue, and when dry gently sanded 'smooth' into the trailing edge, which ironically helped with thinning it!

The standard elliptical wing tips were added, but these didn't seem to want to line up properly either, so I cut the location tabs off and simply butt-joined them to the wing.

The 'flat' cowling top panel, broad cannon blisters, (suitably sanded down), and standard 'rounded' rudder were fitted, however, in early 1944, MH434 wasn't fitted with the large Aero Vee 'uni-



As with the Spitfire Mk I/II kit, the decals are printed by dot matrix, but again are commendably thin, in register and go on without any problems. For the review model, I had to delete the name of the pilot's girlfriend and the 'kill' markings, as the photo of MH434 I was modelling from, was taken in early 1944 before they were applied.

My only personal 'gripe' with the decals is the way the port side serial number has been printed 'under' the code letters. I much prefer serial numbers and code letters to be printed separately, to allow the modeller to position them individually.

Finally, the reference photo of MH434, taken as she looked in early 1944, shows the aircraft fitted with a torpedo-shaped centre-line mounted drop tank, so I used the SAM Publications 'D-Day Spitfire' resin torpedo-shaped drop tank on the review model. I merely mention this, not as a blatant piece of advertising, but so that readers do not think it is included in the kit!

Conclusions

Comparisons may be odious, but do need to be taken into account when reviewing new kits of specific subjects that have previously

been produced by other manufacturers.

Both these new-tool Airfix Spitfire kits are in direct, 'head-to-head', competition with several other manufacturers' offerings, and whilst they may not have the delicacy or finesse of detail that the ICM, Hasegawa and Tamiya range of 1/48 scale Spitfires enjoy, they do have finely engraved panel lines, are easy to work on and construct, have an uncomplicated workmanlike appeal and perhaps most importantly, the finished models do *look* like Spitfires – and with all those optional parts included, they certainly offer good value for money!

Incidentally, there is also a 1/48 scale 'low back' Spitfire Mk XVI due later in the year. Basically this boxing will include the same parts as this Mk IX/XVI kit, but will have a new new sprue featuring 'low back' fuselage halves, replacing the standard 'high back' type. **MAM**



versal' carburettor intake, as supplied in the kit, but still had the smaller 'original' carburettor intake. In the event, I 'borrowed' one from an old Airfix Mk Vb kit I still had in stock, which fitted in place without any problem. Also at this time, MH434 did not carry the outer cannon stubs, just the long 20mm cannon barrels, so the stubs were glued in place, allowed to dry and then trimmed and sanded to the contours of the wing leading edge.





Two-seater NZ'scooter'

As a fan of both the A-4 Skyhawk and the RNZAF, Andy Scott has long awaited the announcement of a 1/48 scale, two-seat, A-4 trainer, being released. To date, no such announcement has been made, so he had to take matters into his own hands... twice!

TA-4K Skyhawk... the hard way?

The only source I knew of for a two-seater Skyhawk was the long deleted, (at least here in the UK), Monogram OA-4M, and that needs a degree of conversion, which Red Roo of Australia provide a conversion set for, (see later).

However, at last year's IPMS(UK) Scale ModelWorld, I spotted three Seminar kits of the TA-4J, a re box of the very old and dated Fujimi kit. The kit is approximately 10% undersize for 1/48 scale – possibly nearer 1/50 scale – and poorly detailed. However, these kits were being sold at a very reasonable price, and not expecting too much from them, I asked if I could look in the box and was rather pleasantly surprised at some of the mouldings. If nothing else they were worth the money for their stores, such as the Triple Ejection Racks and LAU-10 pods, used to 'dress up' some of my single-seater A-4s.

Measuring the model against plans and against the superb new Hasegawa A-4K kit, the Seminar/Fujimi offering is significantly short in span and the rear fuselage, but the nose section seemed quite close to 1/48 scale. Overall it

wasn't really worth building the kit straight from the box, but then I had an idea, (never a good thing in my experience!), if I could graft the Seminar/Fujimi twin-seat nose to the fuselage of the Hasegawa kit it would provide me with the object of my desire – and would be of benefit to modellers all over the world because as soon as I finished it, Hasegawa would announce their two-seater!

So I took the Hasegawa A-4K and Seminar TA-4J kit fuselages and pencilled-in the cut lines, (photo 1). It was very much a case of measure twice cut once, as once the cuts were made both kits would be unbuildable in their original forms.

The accompanying photos show where the cuts were made better than I can explain in words, (photos 2 and 3). The difficult part was retaining the wing root of the Hasegawa fuselage. This took a great deal of careful work with a sharp, No11 blade, following a piece of Dymo lettering tape as guide. The opposite piece needs to be removed from the Seminar fuselage and again an accurate cut was necessary to minimise filling later. Sadly the difference in the fuselages meant the gap was still huge! (Photo 4)

It was important to remove the rear of the canopy fairing, taking special care not to damage the outer surface, (photo 5). Once this was done the basic Hasegawa rear fuselage was completed as per the instructions sheet, with the interior pieces added to give somewhere for the 'new nose' to attach. I also built the wings, although I didn't attach them permanently at this stage, (photo 6).

The Seminar cockpit interior is very basic, with the seats as integral parts to the floor unit. I tried to test-fit the Hasegawa seat as I had a couple of these units in my spares box, but the actual improvement was not going to be that great. In the end I compromised and decided to use the kit parts dressed up with some Hasegawa detail, such as the instrument panels, and I added two pilot figures to (a), add a little life, and (b) cover up a multitude of sins!

Once both main units were structurally complete, I compared the two and realised that the Hasegawa intakes were going to need modifying, (photo 7). The intake trunking needs to be removed flush with the side of the intake interior wall. Once modified, I superglued the intakes to the rear fuselage. This gave a more

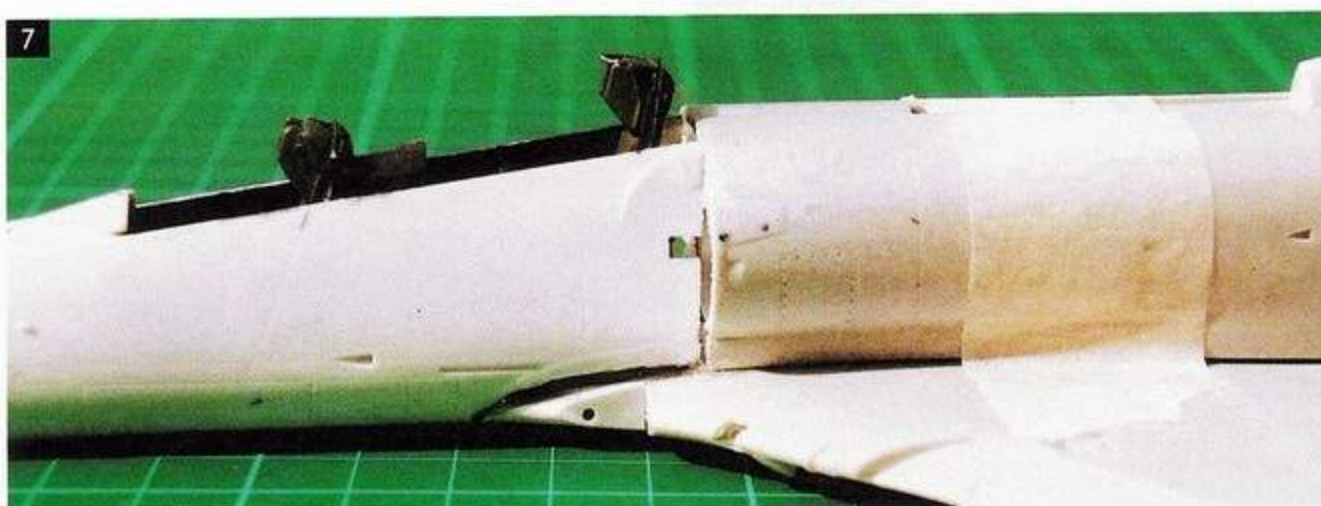
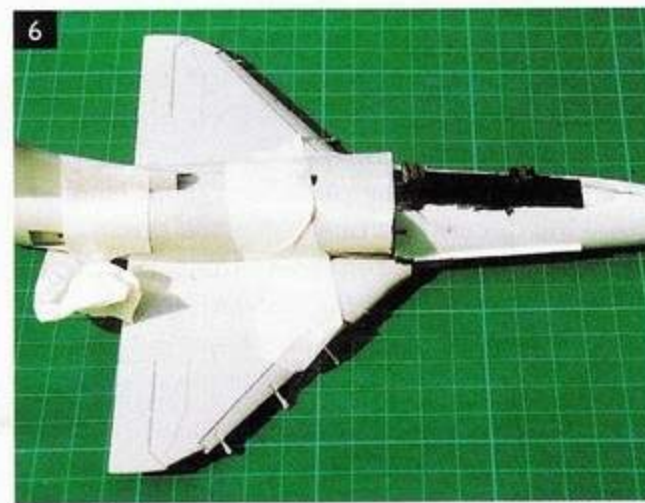
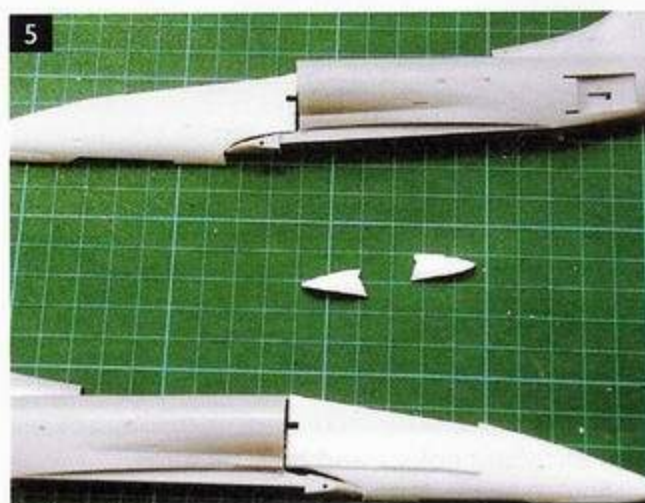
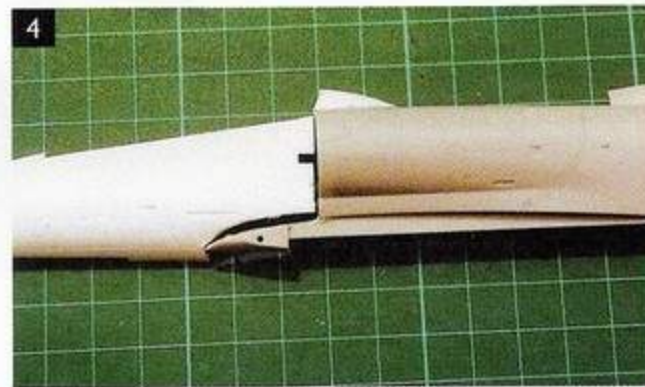
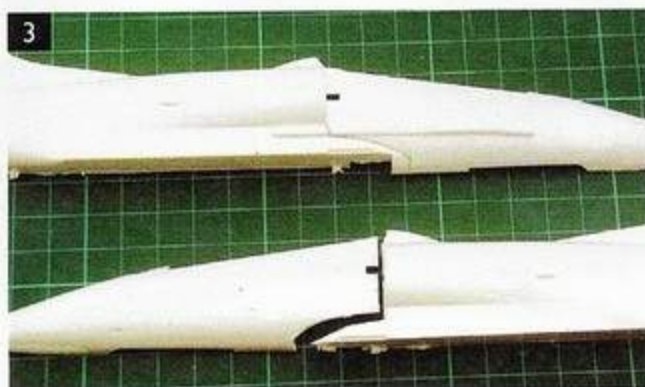
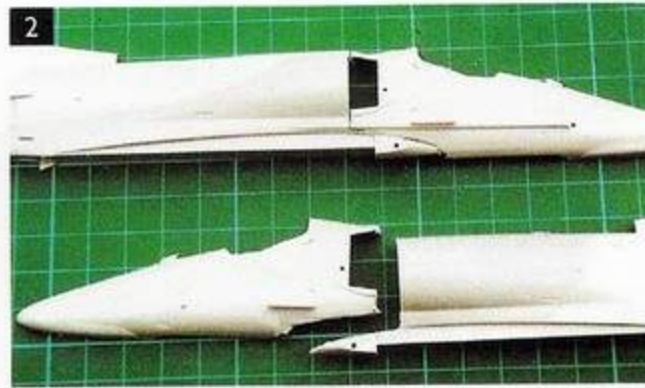
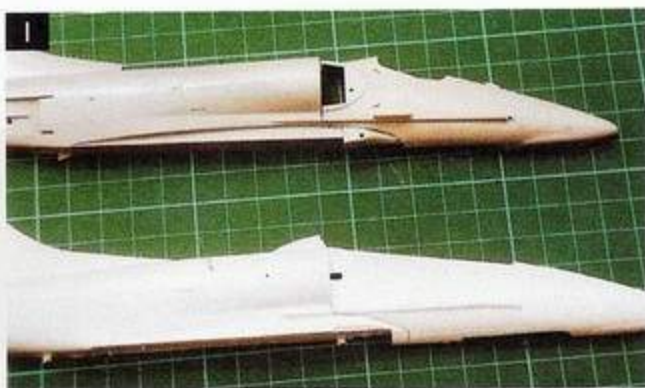
secure anchorage for the nose and covered some of the worst aspects of the joint.

Then the real problem hit, the Seminar nose was far too wide to fit the resultant gap! Sanding to fit was out of the question, so the only solution was to remove the Hasegawa intakes and go with the less detailed Seminar units. Being much slimmer, they actually fitted nicely, but I had to accept the loss of accuracy, (photos 8 and 9).

Once the nose was firmly in place, I removed the push-fitted wings and filled the gaps with a mixture of plastic card and Revell 'Plasto' filler. I like 'Plasto' because until it is truly set it is softer than the surrounding plastic and therefore sands down easily without too much damage to the immediate area. Once this sanding was achieved, I added the Seminar intakes and because of the damage caused by removing the previously super-glued Hasegawa intakes, again I had to fill and sand, (and fill and sand and fill and sand), until I was happy.

The next step was to add the canopy and once that was firmly in place, I added the previously removed fairing. This was also filled and sanded after I had masked the canopy with Tamiya tape and Maskol, (photo 10).

Once this was sanded to my satisfaction, I added the remaining Hasegawa detail parts to the rear end. As normal on this particular Hasegawa kit, the fit of some of these, such as the under fuselage panel and the front part of the spine, needed as much filling as the Seminar bits! Some modification was needed to the nose wheel leg to make it fit the hybrid Semi-



nar/Hasegawa bay, (photo 11).

For me there was only one basic choice of markings – RNZAF. The Kiwis operated a total of six T-birds, (NZ6251 to NZ6256). The first four were original 1970 purchases followed later by a pair of ex-RAN birds. Bizarrely, a seventh airframe, NZ6257 has been mocked-up out of spares and is displayed at the RNZAF Museum at Ohakea. None of these TA-4Ks had

the redundant ECM hump as fitted to their single-seater sisters.

The choice of colour scheme was tougher: the early SEA four-colour scheme; the later 'European 1' three-colour wrap-around scheme; the final overall green scheme or the ex-RAN Gull Gray and white scheme? I finally decided to go with the earliest scheme, as I hadn't applied that scheme on my single-seaters. ▶



Once the colour scheme was chosen it was important to add the following Hasegawa pieces – A14, D17 and 18 and F21, all of which are only applicable to the early A-4K.

With the kit on its undercarriage it was time to break out the paints. I used Polly Scale acrylics for the four main colours. Strangely, when I sprayed the airframe with gloss lacquer to aid the decalling process the mid green refused to gloss up, remaining matt. The decals did adhere to it without any silvering thanks to copious amount of Johnson's Klear/Future.

The decals are a mix of Hasegawa A-4K and



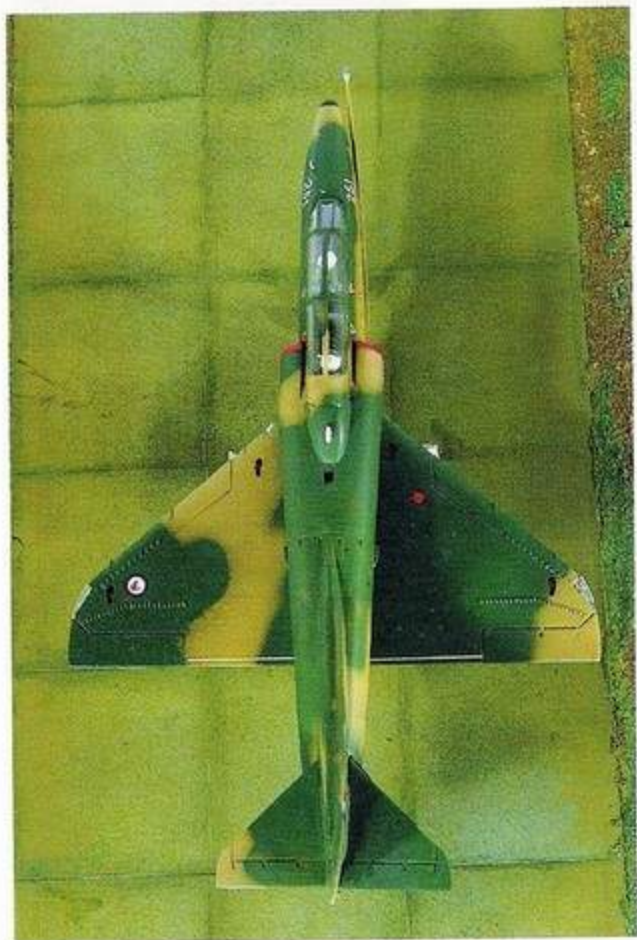
I used a variety of sources to choose my aircraft, the best still in print being 'Topped Gun' by Ross Ewing, which is a military and political history of the A-4 in RNZAF service, and is filled with excellent colour and b&w pictures.

Normally the T-Bird operated with a belly tank and two wing tanks but I had already used one of the Hasegawa tanks for another project so NZ6251 currently has empty pylons. I hoped to use the Seminar belly tank but it is too short. As far as I know no one makes a correctly



sized 400 gallon belly tank for the A-4, but hopefully someone will correct this omission.

I was quite pleased with the end product. I have a pretty unique model, albeit of questionable finite accuracy, but it is 'the only game in town' – at least until Hasegawa issue their T-Bird! (photos 13)



the excellent Gekko Graphics A-4 sheet. No one actually provides decals for the two-seaters as such, but the single seater markings only need an extra set of ejection seat warning triangles and the serials change to reflect the NZ6251 to 56 range.

Perversely, neither kit nor the Gekko decal sheets feature a single numeral '5' so I had to raid my dwindling supply of Modeldecals. Unfortunately the serials from all three sources are different sizes and I had to cut a Modeldecal '5' into three pieces to make it match! The 'T' in front of the 'A-4K' aircraft designator was hand painted, (photo 12).



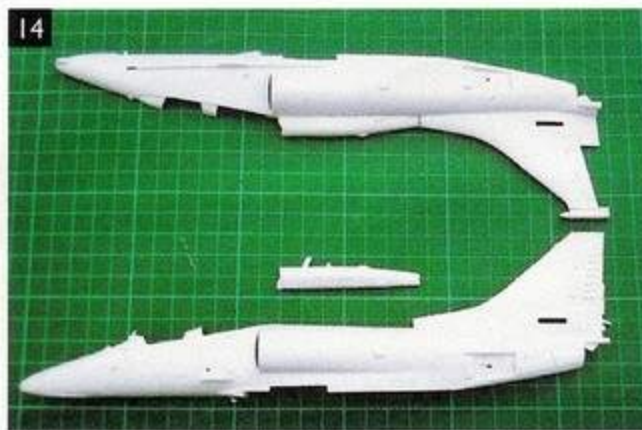
TA-4K – the slightly easier way!

After finishing 'the traumatic' Hasegawa/Seminar conversion, an alternative suddenly became available thanks partly to the generosity of a fellow modeller who had a 'spare' Monogram 1/48 scale OA-4M that he made available to me.

The Monogram OA-4M was a retool of the original Monogram TA-4, complete with the unwanted, (for a TA version), ECM hump, raised panel lines and slightly chunky parts. That said, the level of detail in the undercarriage bays and the provision of separate leading edge slats are at least as good as the Hasegawa kit's. Additionally, the kit has a nice selection of underwing stores, although some are only applicable to the OA-4M – such as the 'Shrike' anti-radiation missiles, the centre line Multiple Ejection Rack and the six Mk 81 250lb bombs. The large underwing tanks are very usable on any A-4 and actually look nicer than the rather 'emaciated' ones supplied by Hasegawa.

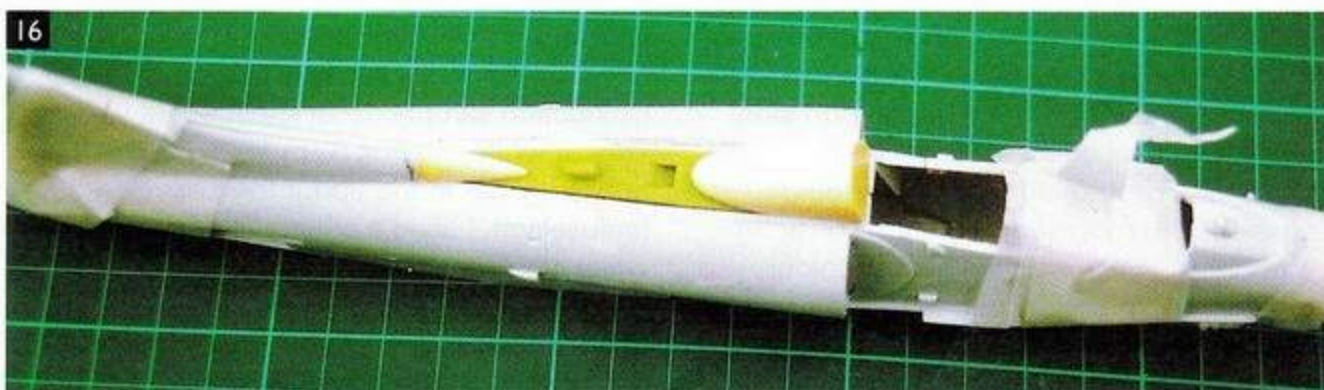
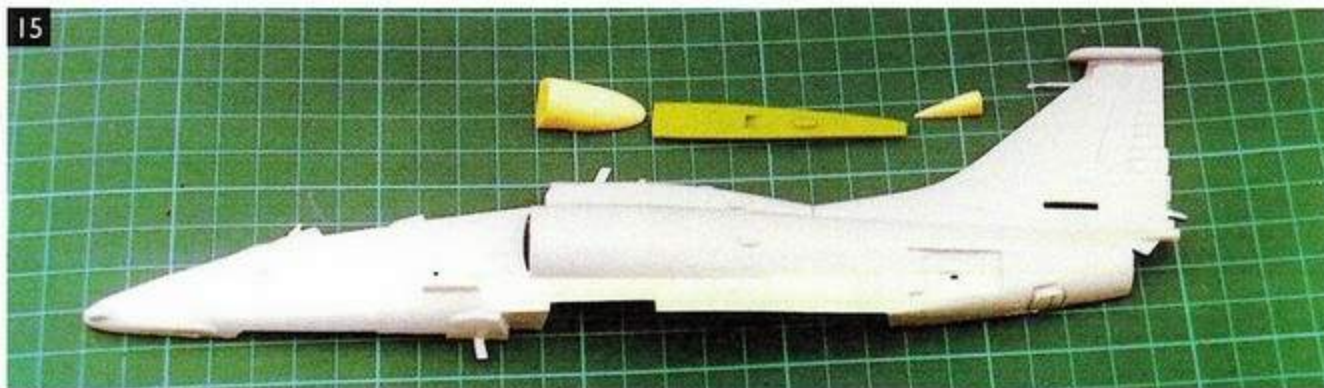
I got my Red Roo Conversion direct from Red Roo at <www.redroomodels.com> for the princely sum of Aus \$7.95. The set comprises three nicely moulded resin pieces, (although oddly, mine were moulded in two separate colours). They also do a DB-107 Buddy pod for Aus \$11.95. The instructions are well thought out in both words and pictures – overall an excellent package.

The conversion starts with marking out all the unwanted protuberances in felt tip pen and then removing them with a mixture of sawing and sanding. I was a little dubious about doing this but the plastic is so thick that



with little filling needed. The fin extension needed a little fettling because of the panel line problem and the cockpit rear needed a little rubbing down to get a nice fit, but generally the conversion is well thought out and can be recommended to all modellers. To be safe, I attached a series of plastic card tabs inside the hole in the fuselage, very much as you would do with a vacform, to give the insert a 'shelf' to rest on for some extra 'grip'.

Once this was done the rest of the model



two standard panels and painted and dry brushed them accordingly.

The Red Roo fuselage insert fits beautifully,

could be assembled as per the instructions. I added all of the under-wing pylons, as all the photos I found on the internet of the particular aircraft I wanted to model, showed her carrying them even though the outer ones were unused. After the inevitable rubbing down and filling of the bits I'd messed up, the whole model was ready for spraying, (photo 17).

For this 'Scooter', I wanted to make NZ6256 when she was painted in the special scheme to celebrate the Golden Anniversary of the RNZAF in 1987. The whole airframe was sprayed in 'Benson and Hedges' Gold. Whether this was a form of sponsorship or the proprietary name of the paint or just a nickname, I don't know! (photo 18)

The aircraft was actually one of the TA-4Gs purchased from the Royal Australian Navy in the mid-1980s and was still finished in the original delivery, (to the RAN), Gull Gray and White scheme. The Aussie roundels and fin



there is no danger of breaking through the fuselage, (photo 14).

The Red Roo instructions show which panel lines to cut down to remove the offending ECM hump. Sadly the panel lines are slightly different on the two fuselage sides which caused me some grief. If I were to do this again, I would tape the fuselage halves together and then start cutting! (Photos 15 and 16)

I used the interior from the kit as it looks pretty good and not all that much can be seen, even in this scale, if you have the canopy closed – as I planned to do. There are actually three instrument panels supplied, two identical and one for the Weapon Systems Operator of the OA-4M. I therefore used the





► flash were over-painted in a slightly darker grey and new Kiwi roundels and a black No 2 Squadron badge were applied. To trial the scheme, NZ6256 had the port roundel and flash removed and was partially painted in the red, white and blue stripes on the port side over the original colour scheme until the full scheme was approved. Now that would make an interesting model!

My normal plan for this sort of colour would be to go and find an acrylic car paint of a suitable colour, however I found that

discernible and the RNZAF lettering is only applied on the upper wing, not the lower, as I originally thought. The decals go on really well and fit the kit excellently.

The only weakness was that on my pre-production sample decal sheet, there was an area of white missing from below the blue horizontal bar in the upright 'A' shape on the fin/fuselage. I used a couple of small pieces of white stock decal to make good this minor omission. The only other decalling issue was that the tank stripes are obviously designed for the Hasegawa kit and are a little short for the chunkier Monogram tanks. Because of the shape, even using the extra decals supplied is not an option and eventually I had to mix some paint and fill in the gaps.

Once all the under-wing stores were in place I added the kit's ladder which I had sanded down to try to make it more in scale.

NZ6256 only flew in this scheme for a few months

before being repainted in the then new 'Euro 1' scheme as part of 'Project Kahu'. NZ6256 was lost, with its pilot, in March 2001, off Perth when serving with No 2 Squadron RNZAF.

Overall, this is relatively stress-free way to get a TA-4 into your collection, and I applaud Model Alliance for producing this unusual decal sheet for a non-mainstream subject. The Red Roo resin conversion is superb, but the main drawback is the non-availability of a suitable base kit. Come on Revell, please reissue it, you'll sell loads... honest! **MAM**



Tamiya Gold was a good match. A couple of light coats gave me the finish I wanted and after a light spray of gloss varnish I was ready for the decals.

NZ6256 was the subject of an old Microscale sheet, (I think 48-211), which is now long gone, but Model Alliance have come to the rescue with a brand new sheet. The new decals are really nice, and Jon Freeman, the decal sheet designer, has got the difficult things right, like using the same blue for the roundels as the stripes, which was different to the normal roundel blue used by the RNZAF. The under-canopy lettering is easily





Nieuport's Superb    

The Type 17

In the first of a multi-part series of combined reference and modelling articles featuring aircraft from World War One, Stephen Lawson models the Eduard 1/48 scale Nieuport 17

The Nieuport 17 is a favourite subject amongst most aviation modellers. It can be found in the collection of almost every builder and in select aviation museum displays. Aftermarket companies like AeroMaster and Eagle Strike have put out some great decal sheets in a variety of markings. With the advent of Eduard's Limited Run series this mould is seeing a revival that just proves the interest is as strong today as it ever has been in these old 'stringbags'.

The Nieuport Type 17 appeared at the front in the beginning of May 1916. The design followed the progressive requirements that were based on the previous successful versions of fighting 'sesquiplanes', (ie one and a half wings), the Nieuport 11 and 16 – (Ed Note: see next month's issue).

The Nieuport 17 types were usually armed, as standard, by an 'over the top wing' mounted, non-synchronized, Lewis machine gun, or by a 'forward deck mounted', synchronized, Vickers machine gun, or sometimes even by both weapons. In other cases, as will be seen here, twin Lewis guns could be carried. Besides the French Air Service and Naval Air Service, Nieuport 17s also served in the British RFC, Belgian, Russian and Italian Air Forces, but were too late and 'out of date' for the American Air Service frontline use in 1918. They were built in



Russia and Italy under license at the firms, Duks and Nieuport-Macchi.

Originally released in the early 1960s, the venerable Hawk, (now Testors), kit was only 1/48 scale Nieuport 17 available for many years, then, in 1998, there appeared on the eastern horizon a set of moulds from the 'Wonder-Works' of Eduard, in the Czech Republic. The two first kits, (#8023 'French' version and #8024 'RFC' version), were soon followed by the Profipack version, (kit #8033), made for the 'serious' World War One modeller/collector.

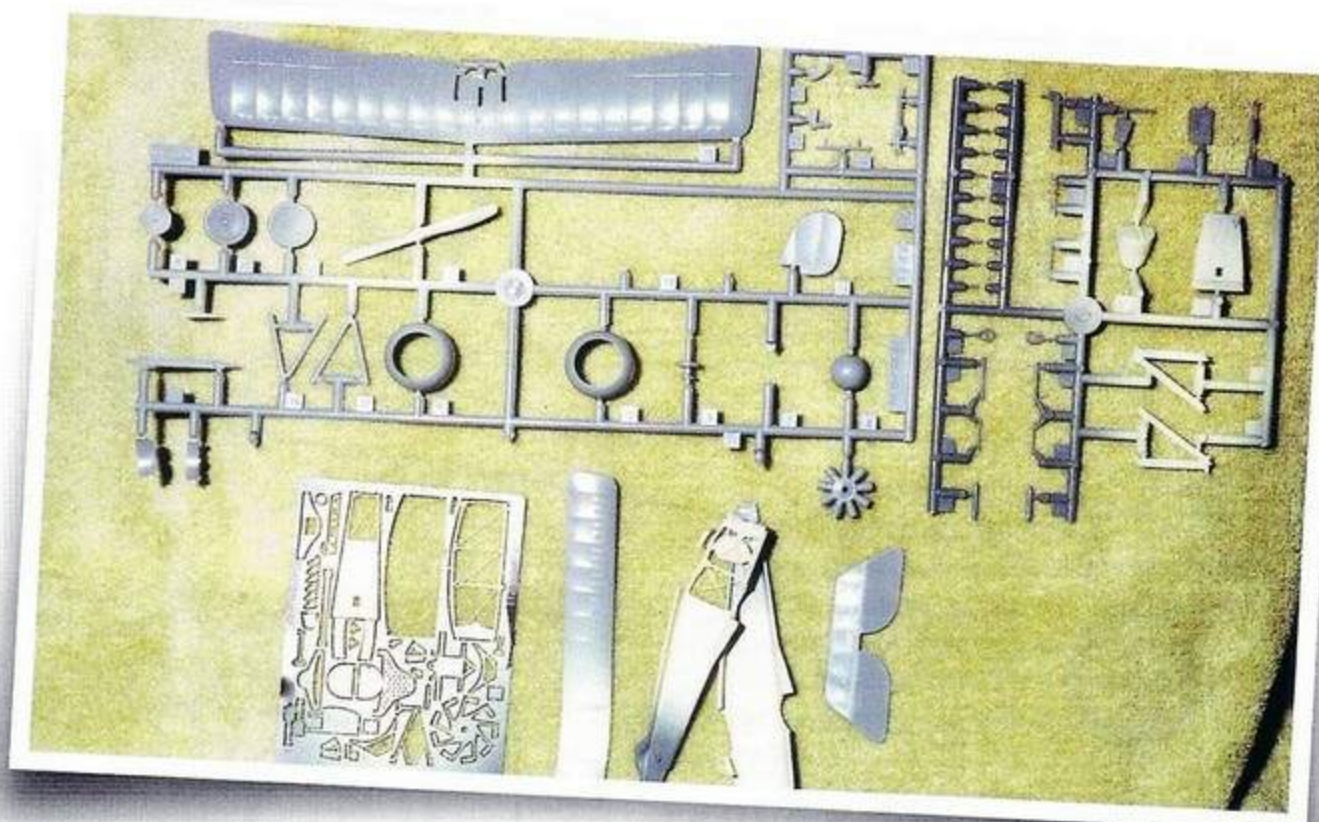
Developments of the basic Nieuport 17 airframe were subsequently released by Eduard, such as the essentially identical Nieuport 23, (kit #8075), and the 80hp Le Rhone-engined, Nieuport 21, (kit #8076), with its Nieuport 11 fuselage and Nieuport 17 wings, which is also marketed as a Profipack kit. At the time of writing, Eduard are due to release a Nieuport 11 in 1/48 scale and will hopefully continue the series and produce the Nieuport 21bis, Nie 24, Nie 24bis and Nie 27. I chose the Profipack Nieuport 17 kit to build here.

Nieuport 11, N571, of Escadrille N67, (pilot unknown), operating over the Verdun Front, spring 1916



Step 1:

The brass etched components provided in the kit were used throughout this construction. The instruments had dial faces added and a compass and a fuel pressure hand pump was fixed to the right fuselage half near the floor level. The empty ammunition belt collector, (PP A6), was attached to the left half of the fuselage. The rear panel of the ammunition box, (PP A26), attached directly to the spent cartridge chute, (PP A25), and the left fuselage half. I added some scrap plastic behind the ammunition box to give it, and the other minor parts attached, more strength. Heating/annealing the seat harness, (PE 1 & 2), helped them lay down and conform like the fabric originals. I also added two pieces of scrap plastic to the assembly of the cockpit floor, (PP A3), and the control column/seat support, (PP A5). These scrap pieces provided a lip edge again for further strength to the whole assembly when dry. Short crossed sections of fine wire were added to the sides of



the fuselage halves to represent internal rigging. Even if you have excellent eyesight, no modeller should be without an optical magnifier in visor form for this sort of close work. It simply improves your work exponentially.

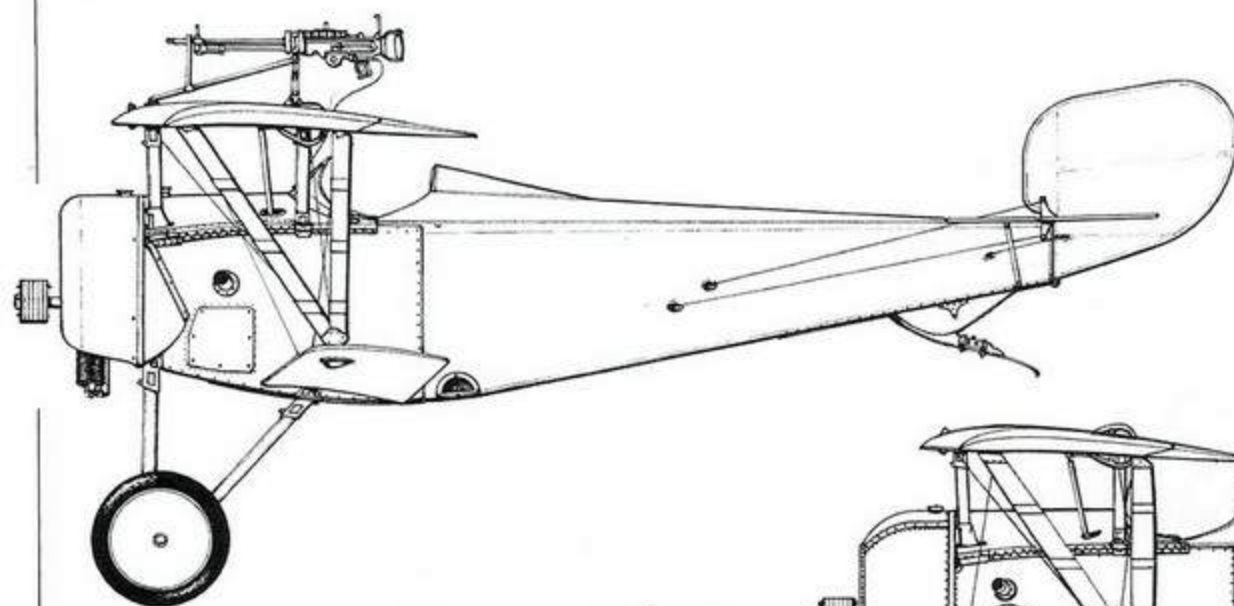
I measured out some fine wire to represent the aileron actuation rods, (PP A19 & A20), (seen in the instructions at Step 6), which had them travel, in one piece, for each side the full depth of the cockpit, out of the fuselage and to their eventual resting posts in the top wing.

Even with the Profipack kit, I had to manu-

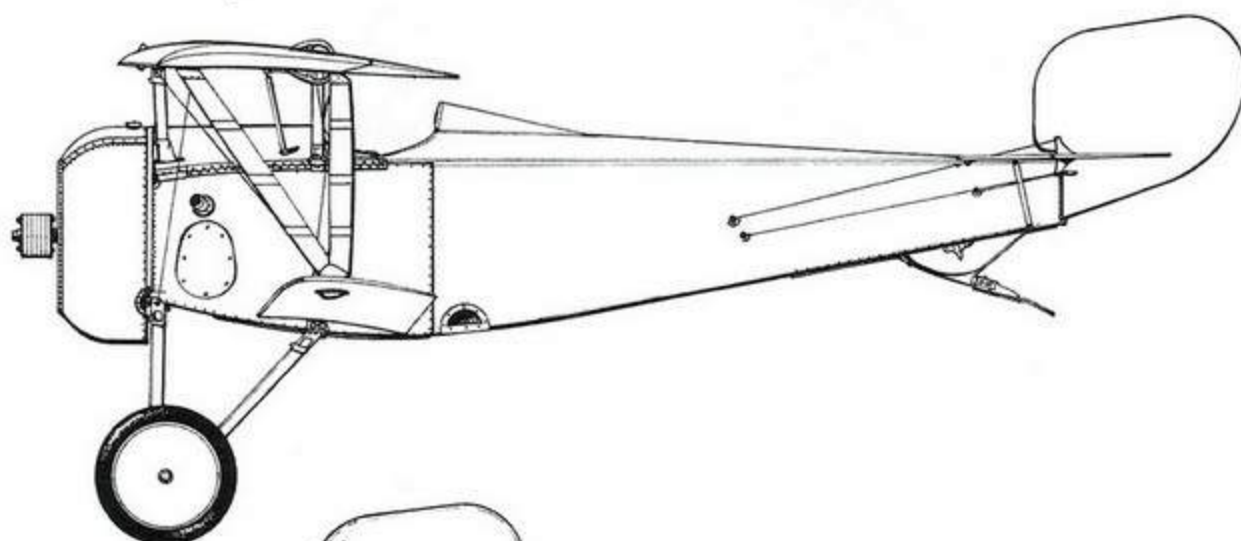
facture a starter magneto and a hand pump to pressurise the fuel tank, to go with the fuel and oil gauge, (PE 13 and PE28). I still needed another gauge to serve as the tachometer and finally a compass. I used Tom's Modelworks French interior detailing brass fret in 1/48 scale for these. It has many fine and unusual details not seen anywhere else – and comes at a reasonable cost.



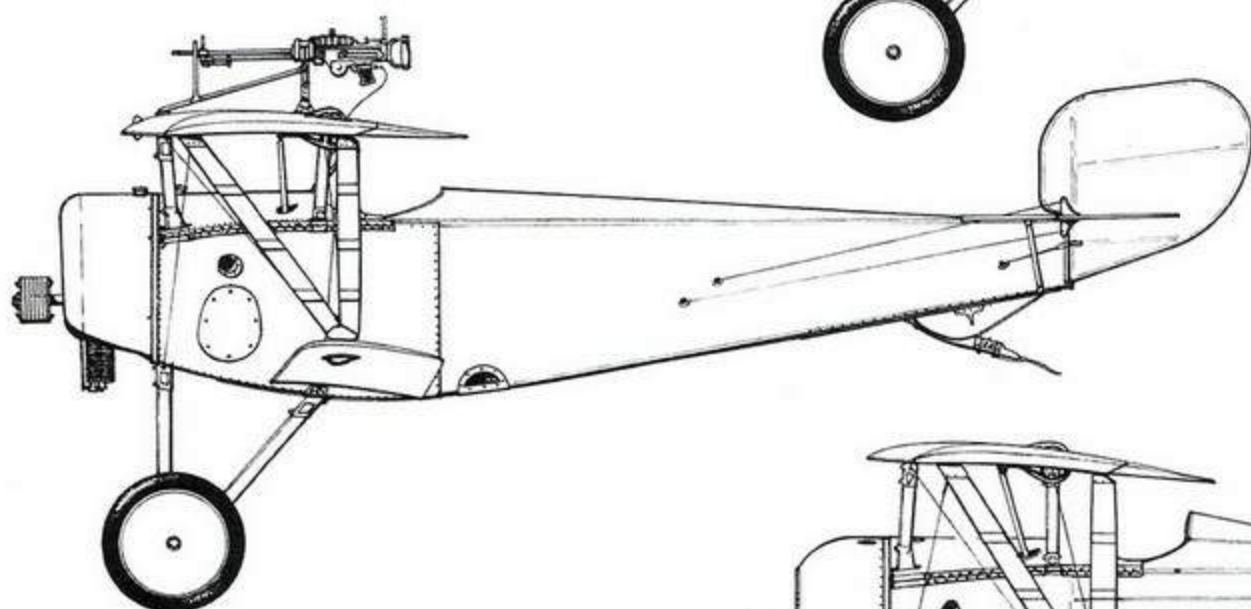
Nieuport 16, (serial unknown), of Escadrille N3, flown by Sergeant Andre Chainat, (11 victories), operating over the Somme/Verdun Front, July 1916. Andre Chainat survived the war and died in 1961



Nieuport Ni 17

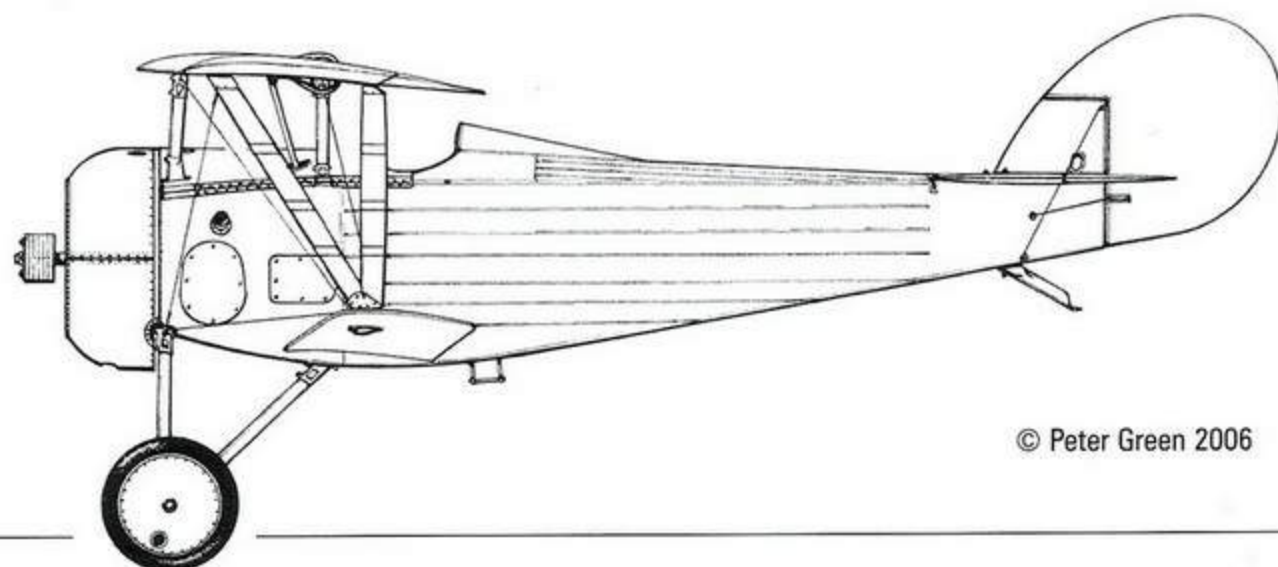


Nieuport Ni 16



Nieuport Ni 27

Nieuport Ni 21



© Peter Green 2006

► Step 2:

When the fuselage halves were joined to the engine crankcase assembly, (PP B3), I added a section of plastic to represent an oil tank. The spout was adjacent to the top dead centre of the fuselage joints on the cowling. This crescent shaped tank was attached directly to a fuselage half between the inner lip for the cowling, (PP B9 or B10), and the crankcase assembly, (PP B3), on the firewall. Its length was slightly less than a quarter of the circumference

of the cowling with its ends squared off. I then erased all seams in the fuselage joints.

Step 3:

Began with the cowling assembly. I thinned down the lower rear edge of the cowling for more of a scale thickness. I drilled a small hole at the stern post of the fuselage assembly and then added a section of fine wire which ran to the rudder. I also added fine wire to the spark plugs which travelled back to the crankcase assembly, (PP B3). It was at this point that I pre-drilled all strut and rigging holes.

Step 4:

I replaced the front cabane struts, (PP A21 & A22), with metal rod. The top wing was then attached and set aside to dry in a 'Lego' block jig. When this was thoroughly dry, I began the rigging process. Fortunately the Nieuport fighters are a good first kit for attempting rigging a World War One aircraft. I always drill the smallest hole to anchor the rigging material and as I add more lines, I enlarge the hole – after the anchored lines have dried thoroughly.

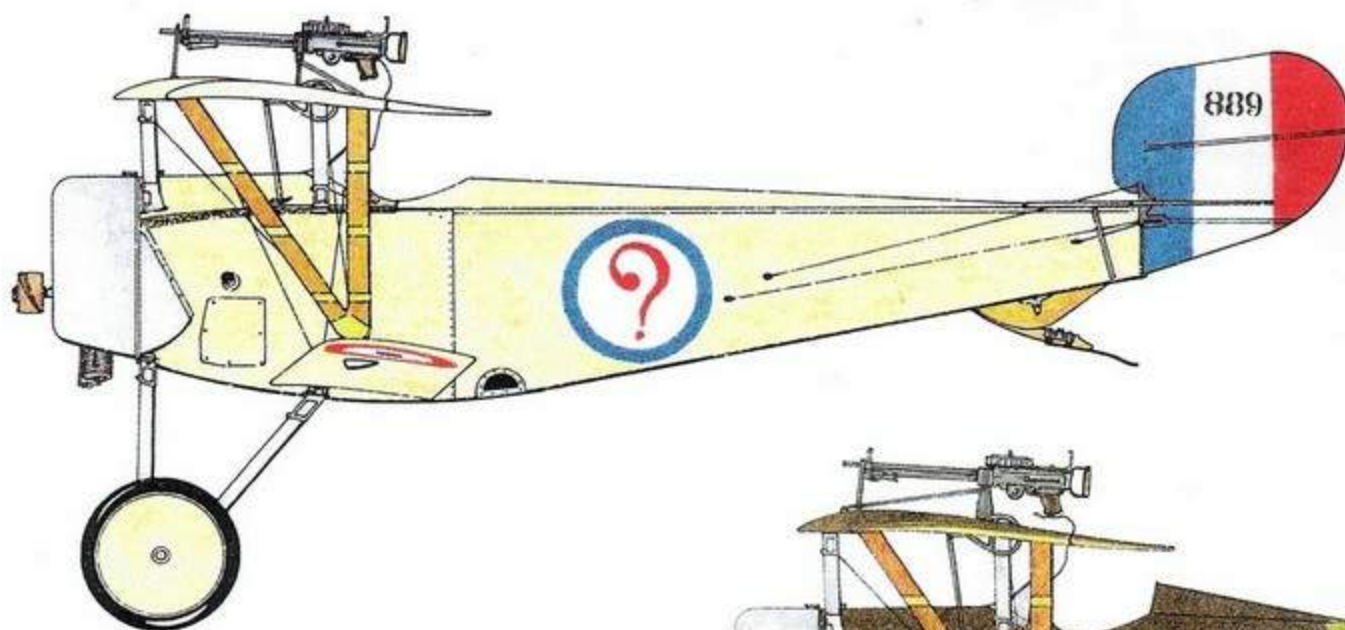
The ends are passed through the next hole

and held tight by clipping a spring-type clothes peg to the line ends. The smallest drop of Superglue (cyanoacrylate) is 'touched' to the area and again left until set. A sharp razor/craft knife is then used to trim the loose ends of the strands. I like to fill any remaining holes with resin dust, wood dust, (when I cut my own laminated propellers), or even baking soda to the holes, with the glue drops already in them. This 'filler' takes only a small amount and dries almost instantaneously with thin consistency Superglue (cyanoacrylate.).

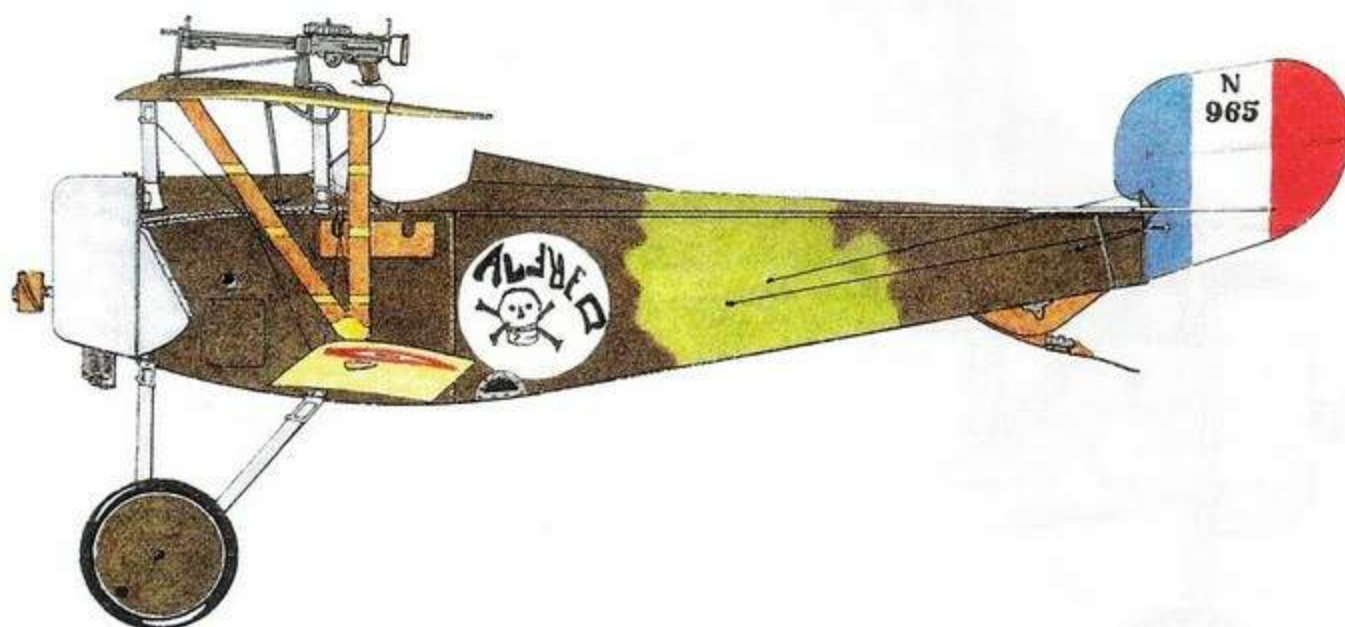
Step 5:

Care is needed with the method of attachment of the landing gear struts. The kit parts are fine, but need to have the axle, (PP B15), laid exactly in the crotch of the landing gear 'V's, (PP B16 & B17). I wrapped upholstery thread around the front leg back to the rear leg and then forward again. Several rounds does the trick. This traps the axle and authentically represents the bungee shock chords used on the original. I replaced the horizontal stabiliser struts, (PP A17 & A18) with metal rod and continued any unfinished rigging at this time.

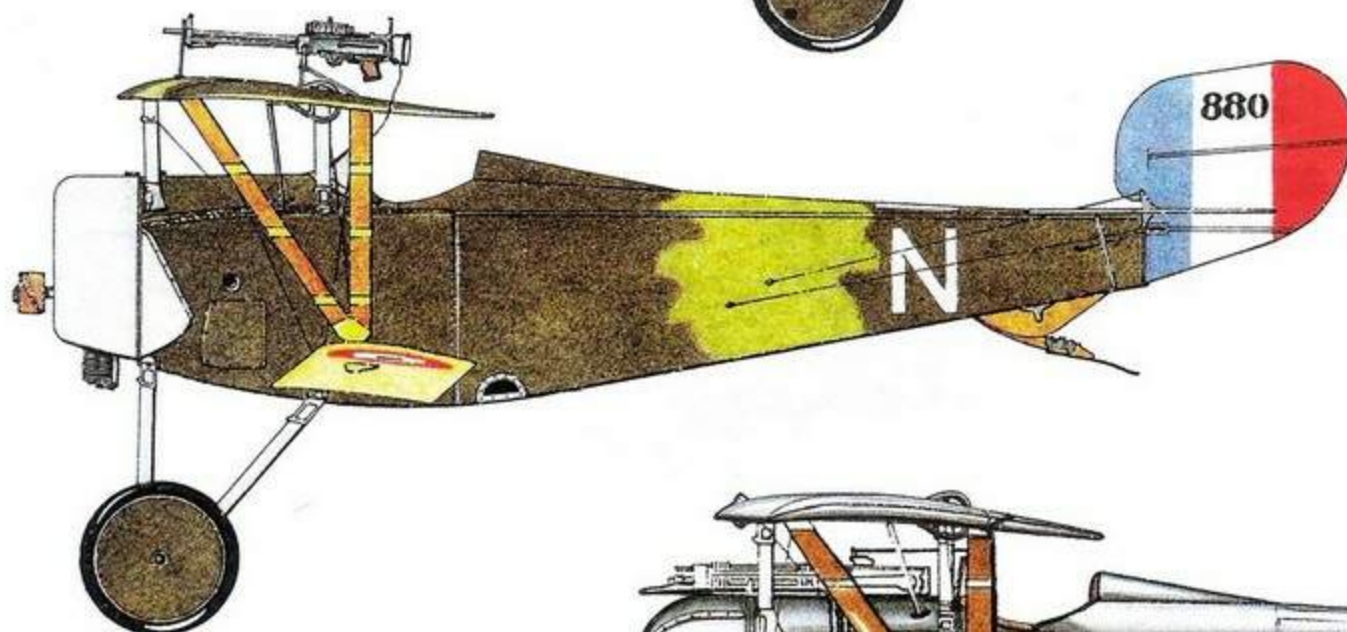




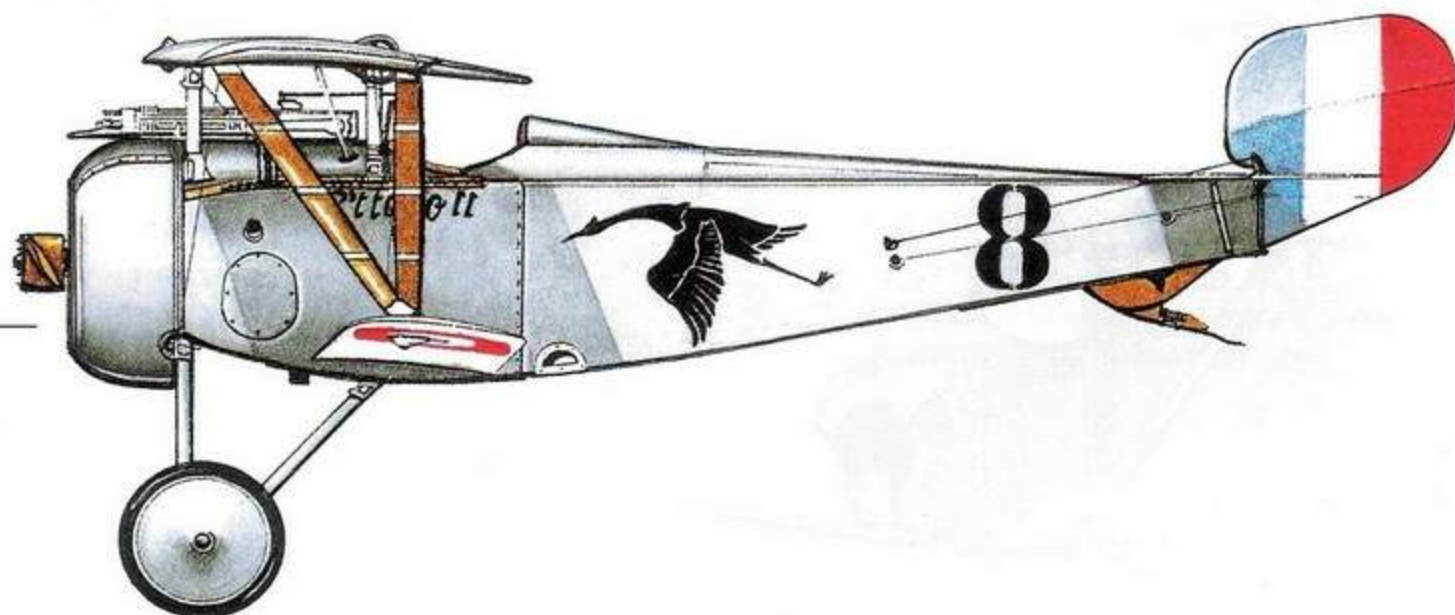
Nieuport 11, N889, of Escadrille N102, (pilot unknown), operating over the Verdun Front, late 1915



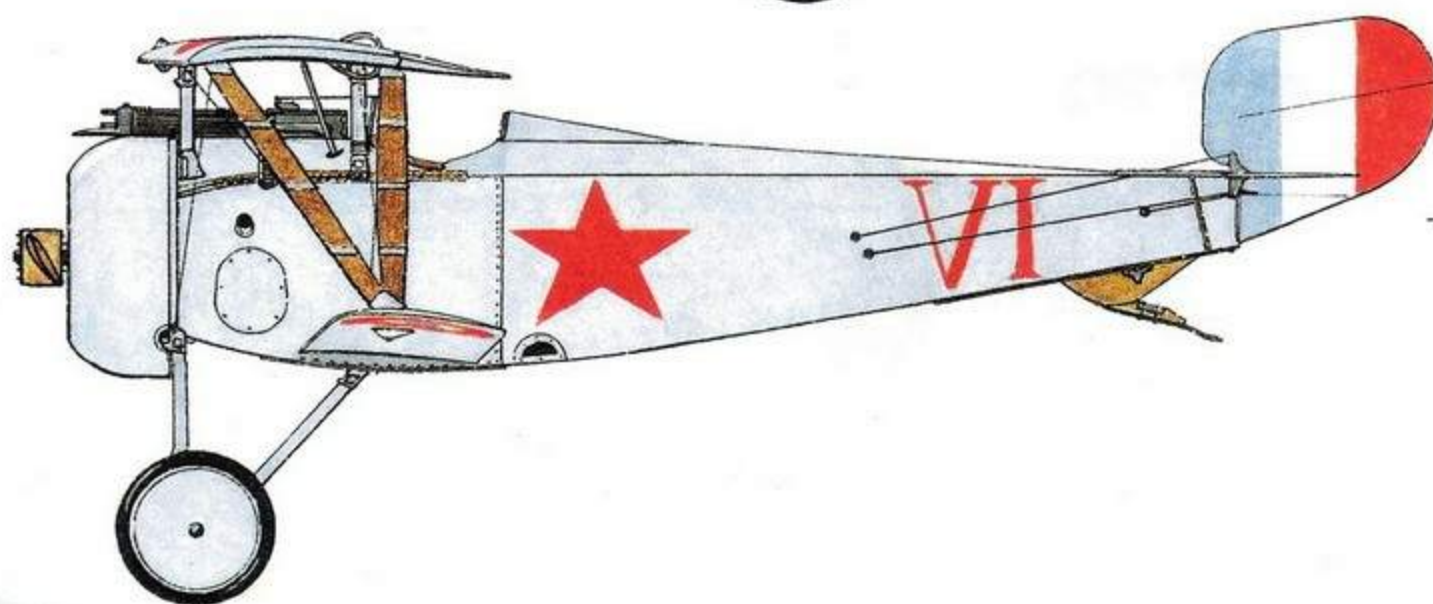
Nieuport 16, N965, of Escadrille N23, flown by Adjutant Maxime Lenoir, operating over the Verdun Front, spring 1916



Nieuport 16, N880, of Escadrille N124 'Lafayette', flown by Charles Nungesser, (whilst he was attached to N124). He was wounded in this aircraft on 27 April 1916 whilst in combat with five German aircraft, including Fokker E-III monoplanes. N880 was found to have 118 bullet holes in it after landing!

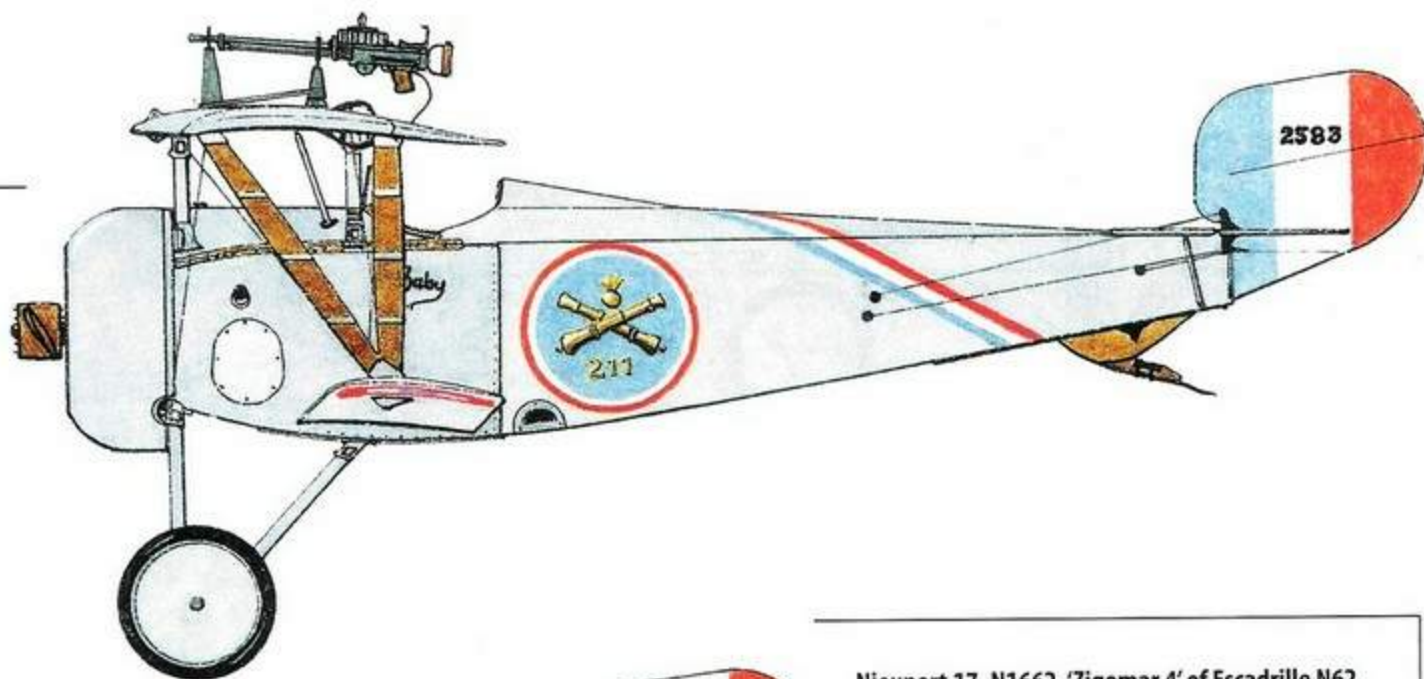


Nieuport 17, (serial unknown), of Escadrille N3, flown by Adjutant Joseph Guiguet, December 1916

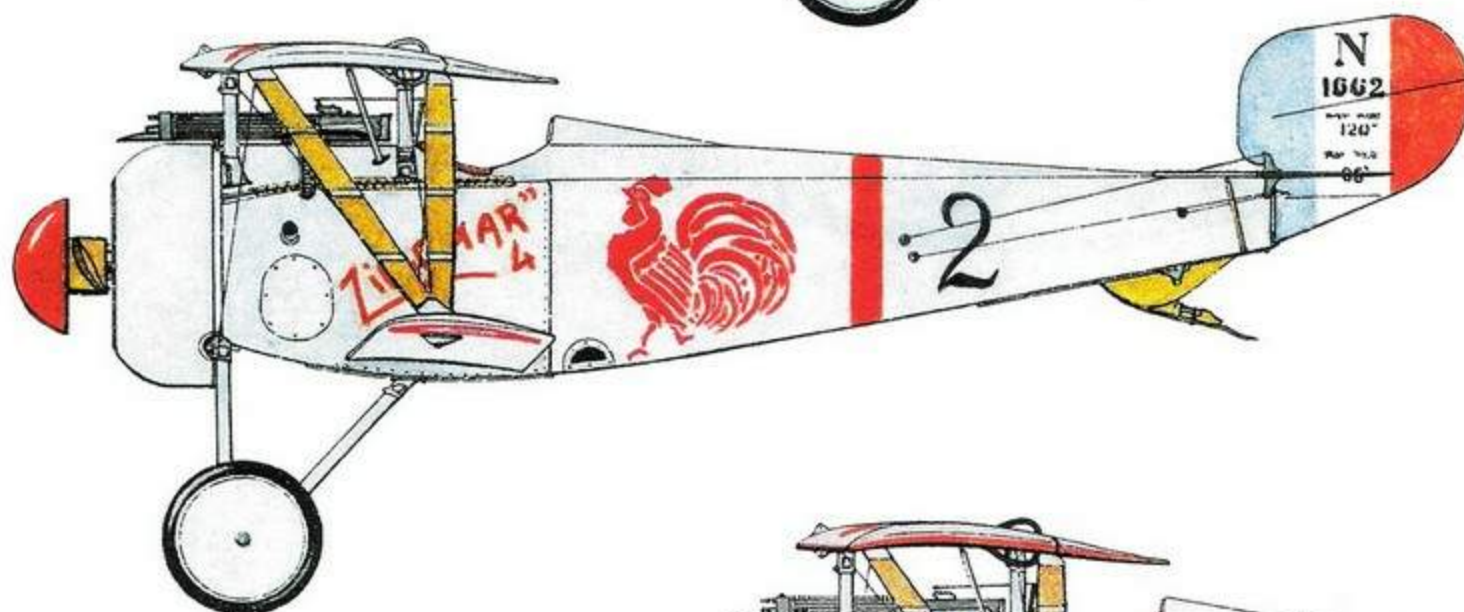


Nieuport 17, (serial unknown), of Escadrille N103, flown by Lt Fontaine, attached to VI^{ème} Armée Group. Cachy airfield, south of the Somme, spring 1916. In April 1916 became part of Groupe de Combat 12, 'Les Cigones' (The Storks), and the original red star marking was changed accordingly

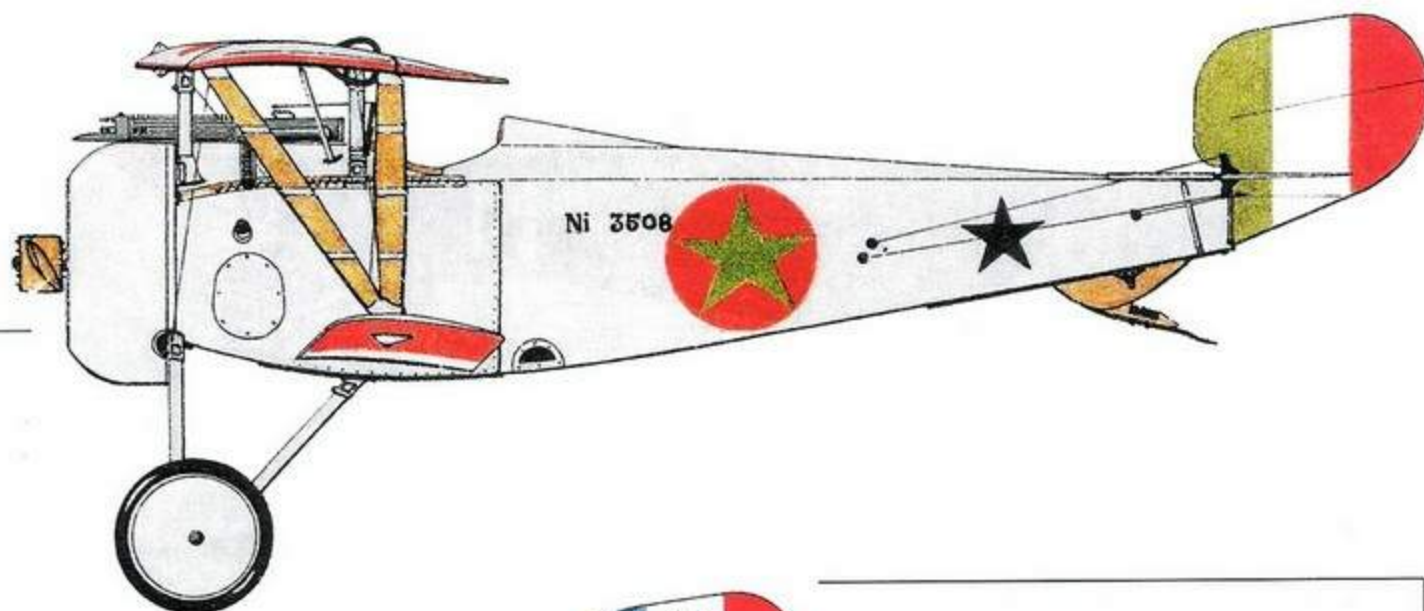
Nieuport 17, N2583, of Escadrille F211, April 1916. At this time F211 was a Reconnaissance/Artillery Observation unit flying Maurice Farman F40s, with the Nieuport 17s used as escorts



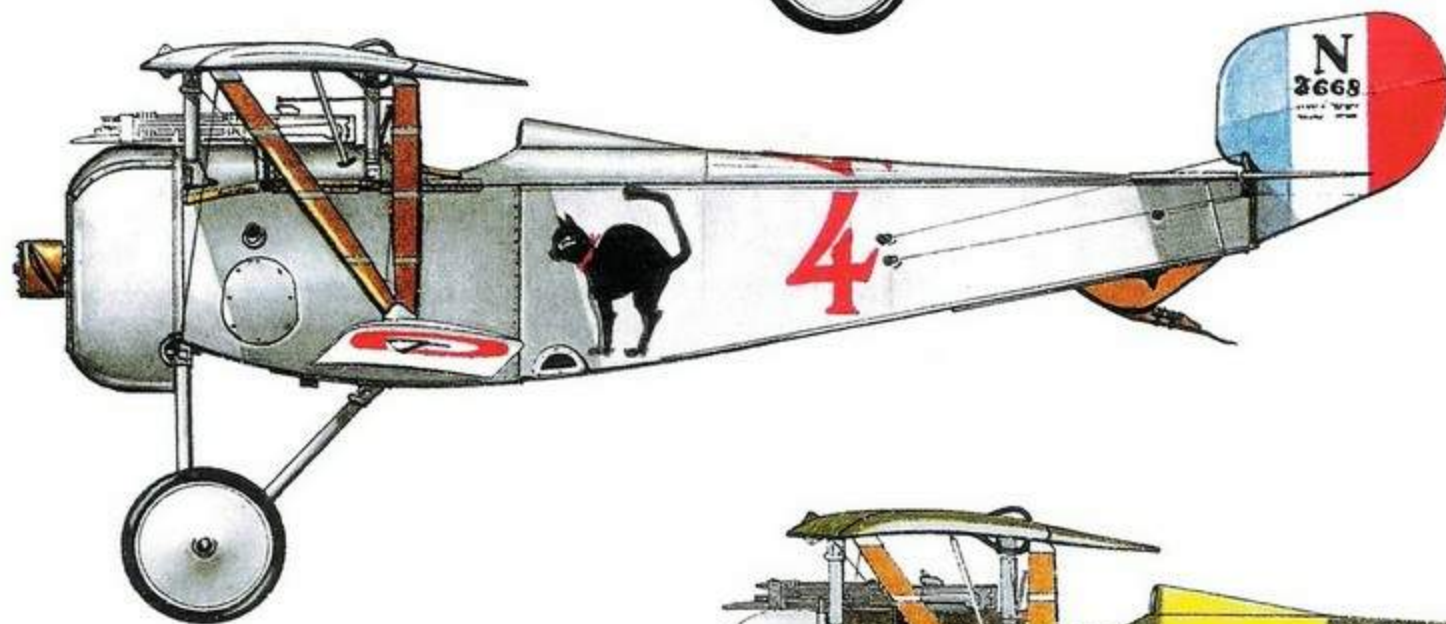
Nieuport 17, N1662, 'Zigomar 4' of Escadrille N62, flown by Lt Paul Tarascon, summer 1916. Despite having an artificial leg, Lt Tarascon was credited with twelve victories



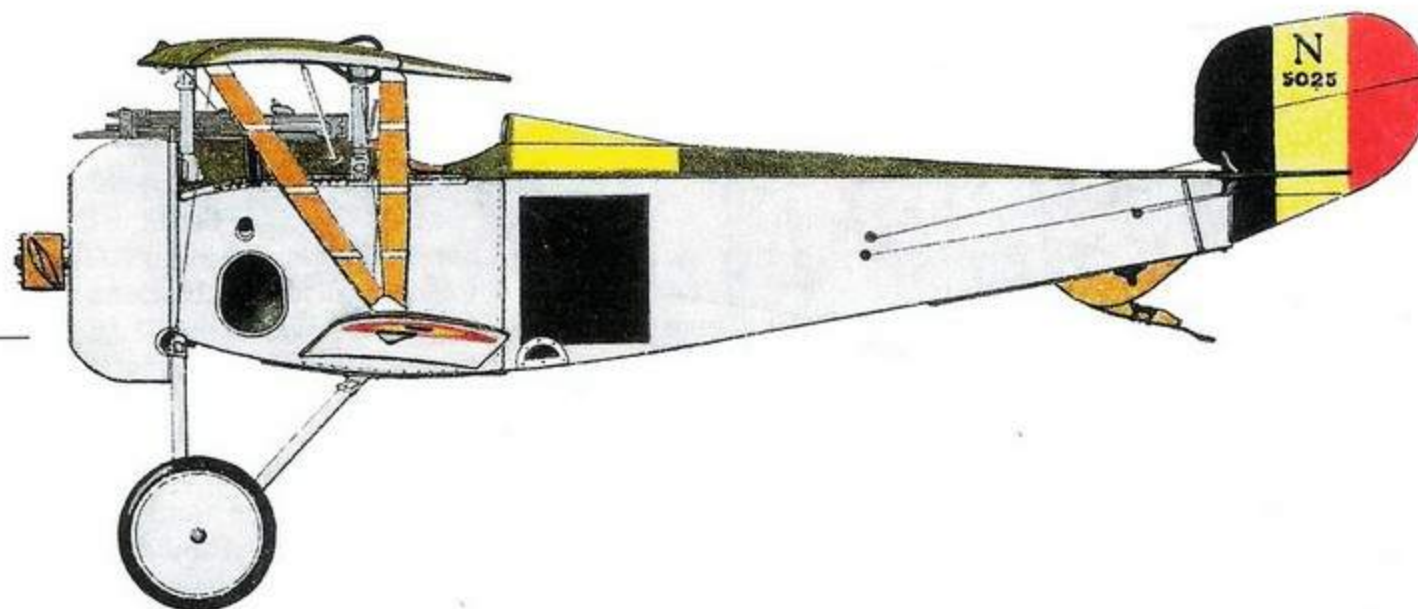
Macchi-built Nieuport 17, N3508, (pilot unknown), of 80^a Squadriglia, Aiello, circa 1917



Nieuport 17, N3668, (pilot unknown), of Escadrille N87, Manoncourt-en-Vermois, May 1917



Nieuport 23, N5025, flown by André de Meulemeester, of 9 Escadrille, Force Aérienne Belge, (Belgian Air Force). Meulemeester, Commander of Yellow Flight, identified by the yellow panel behind the cockpit, was Belgium's second ranking 'ace', and was known as 'Mystère'



► Step 6:

This is where I added the replacement metal rods I spoke of in Step 1. This allowed me to delete the plastic parts (PP A8, A9, A19 & A20.) Eduard's Lewis gun, (PP B21), was augmented by replacing the gun barrel with metal rod. Also, although I used the Eduard Profi-pack kit, (#8033), I added aftermarket brass etch detail parts from the Eduard Set #48249 to this build.

Step 7:

Finally, I added the propeller. Although French aircraft propellers were built up in the conventional way with laminations of wood, on Nieuport and SPAD fighters, the surface finishing included a solid uniform coat of red-brown shellac in most cases.

Decals

The model represents a Nieuport 17, serial N1895, flown by one of France's top 'aces', Lt Charles Nungesser of *Escadrille N65*, circa July 1917. When this 'bird' got beat up so badly, Nungesser simply transferred the serial number to a new machine. He used the same serial, N1895, on several subsequent Nieuport fighters, even on a Nieuport 25!

Noted with 45 victories and seventeen crashes, his record made him the second highest surviving French pilot of World War One. The macabre personal marking was Nungesser's talisman against death. He was

finally listed, (post-war), as MIA in Nova Scotia after attempting an early Trans-Atlantic Flight. His luck must have run out!

The national markings were used in the normal locations. They very nicely cover up any rogue patches that were left concerning the rigging holes.

Other aircraft represented in the kit include N1490, an early camouflaged Nieuport 17, (also flown by Nungesser in the summer of 1916); N1844 flown by *Lafayette Escadrille N.124, Adjutant, Gervais Raoul Lufbery*; N2614,

a Nie 17 of French manufacture, assigned to the Italian 'ace' *Capitaine Francesco Baracca* of the 70a *Squadriglia* in the spring 1917; and N2223 flown by Captain Jevgraf Nikolayevich Krutyenyi, the commander of the 2nd Fighter Wing of the Imperial Russian Air Service. This aircraft may have been equipped with the more powerful Le Rhône 120hp rotary engine. **MAM**

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- 'Nieuport Aces' by Norman Franks, Osprey, 'Aircraft of the Aces #33', 2000.
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- 'Nieuport Fighters Vol 2' by R. Rimell, Albatros Pub. 1994.
- 'Nieuport Vee Strutters' by S Nelsen, Cross & Cockade USA, Vol.7, #3, 1966.
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Nieuport 17C, N2779



Stephen built another model, from the Eduard kit - Nieuport 17C, N2779, of *Escadrille N112*, flown by Sous Lt René Carré, circa April 1917

Norwegian Lodestar



Nils Mathisrud creates a Lockheed Lodestar, using Koster's 1/48 scale Ventura and Sanger's Hudson... with Norwegian connections!

In May 1941, the Norwegian government in exile in London, decided to establish an air route between Britain and neutral Sweden. It was of great importance to have a fast connection between the 'London government' and the resistance groups in Norway. Another reason was the number of Norwegian refugees that escaped over the border to Sweden and wanted to join the Norwegian Armed Forces in Britain to continue the fight against the German occupation. Before the German assault on the Soviet Union in June 1941, they could get to the UK through Russia and Asia, but after the assault this route was closed. Only two routes to Britain then remained, either by boat across the North Sea or by air transport from Sweden.

A request to the British authorities for aircraft did not result in any aircraft. The British had no aircraft to spare. Attention was then turned to the US and after some negotiations two civilian Lockheed Lodestar Model 18-10 were acquired. After some modifications in the US, the aircraft were flown to Britain where they arrived in July 1941.

Since Sweden was neutral, the aircraft had to be flown on a civilian route to Sweden. Norway did not have concession on any route between Britain and Sweden though. But BOAC, (British Overseas Airways Corporation), had, and already operated a route between Leuchars, Scotland and Bromma airport in Stockholm, Sweden with modified Lockheed Hudson aircraft. Eventually the 'BOAC Norwegian Detachment' was established at Leuchars. The Norwegian aircraft were to operate on the British concession and had to

be painted with British civilian registration and the crew had to wear BOAC uniforms and were carrying British passports.

The flights between Leuchars and Bromma were operated at night to avoid being detected by *Luftwaffe* fighters over Norway. Eventually twelve Lodestars were acquired by the Norwegian government for the 'Stockholm route', the remainder being two C-56Bs, (Lockheed Model 18-40), and eight C-60As, (Lockheed Model 18-56), acquired on Lend-Lease terms. The Norwegian crew also operated British aircraft on the route, including Lockheed Hudsons and de Havilland Mosquitos.

Lockheed Lodestar

The Lockheed Model 18 Lodestar was developed from the Model 14 Super Electra. The biggest difference was a lengthened fuselage, increasing the passenger capacity from ten to fourteen seats. Furthermore the wing area was increased by extending the chord on the inner sections of the wings.

With the threat of war lurking, followed subsequently by the actual outbreak of the war, the need for military aircraft of all categories arose. On request from the British Purchasing Commission, the Super Electra was transformed into the Hudson patrol bomber and the Lodestar was later developed into the Ventura.

With no kits of the Lodestar available – in any scale – kits of the two military types, Hudson and Ventura, had to serve as the base for my cross-kitting conversion. Having previously built a model of the Lodestar in 1/72 scale, using Academy/Minicraft's Ventura and the Airfix Hudson, I knew which steps to go through.

However, vacform plastic and the opportunity for more detailing made this modelling project a greater challenge.

My choice of model subject was a Model 18-10, one of the first two aircraft acquired by the Norwegian Purchasing Committee for use on the 'Sweden Run'. Reasons for this were partly the choice of colour scheme and partly the fact that this was originally built as a civilian airliner. A set of 1/72 scale drawings of the Lodestar was published in IPMS Finland's magazine 'Mallari', issue 45. Based on these I made myself a new set of drawings in 1/48 scale.

The main sources for this model were two vacformed kits, the Koster Aero Enterprises Lockheed Ventura, with various parts taken from the Sanger, (previously Contrail), Lockheed Hudson kit. An injection moulded Ventura kit has since been released from Fonderie Miniatures, based on the same moulds as the Koster vacform, and would possibly have been an easier alternative! It might also have been easier to use the Classic Airframes' Hudson instead of the Sanger kit, but since just a few parts were needed from the Hudson this would have been a rather extravagant and expensive way to go.

Fuselage exterior

First I separated the Ventura fuselage halves from the backing sheet and trimmed the edges. The openings for the cockpit transparency, dorsal gun turret and tailplane were also cut out. The Koster kit has the cabin windows moulded as blisters in the fuselage side. By cutting off the blisters from the outside, flush with the fuselage, you get the correct window openings.

However the Lodestar has a different cabin window arrangement. I cut out the cabin window blisters as per instructions, but I repositioned them from the inside. I then sanded them flush from both the outside and inside and filled any remaining cracks with Milliput. I also used Milliput to fill most of the panel lines as the layout is different on the two types, (photo 1). The next job on the fuselage halves was to cover the inside of the wing root with parts of plasticard, to get smooth fuselage sides, (photo 2).

Whilst the Ventura has a gun position at the rear underside of the fuselage, this is not present on the Lodestar of course. To build up the smooth underside contour of the airliner, I removed a section from the Ventura fuselage – from the panel line in front of the gun position's glazing and towards the rear along a line at the widest width of the fuselage, (photo 3). A corresponding part was cut off from the Hudson airframe and attached to the Ventura, (photo 4). Scrap plastic was cemented to the inside to support the join.

Similarly, the Ventura's nose was cut off and replaced with the Hudson's nose. The fit here was not very good, and some filling was required at a later stage, (photos 5 and 6).

With the basic shape of the fuselage modified, it was time to start on the cabin windows. These were first drawn up on the fuselage, using the 'Mallari' drawings as a guide. I first made two lines for the upper and lower window frames, then I sketched the side frames. The window openings could then be cut

out. I made the openings slightly larger than the actual window size, removing nearly 1 millimetre too much on each side. I thought this would make the installation of the windows and later masking and painting easier. The cabin door was also cut out at this stage, accurately, around the door's outline, (photo 7).

Fuselage interior

The fuselage halves were laid aside for some time and I started work on building up the interior. The Koster kit provides a nice cockpit and the radio operator's position behind the cockpit. The wing spar, that goes through the

bracings. For a military C-60 version this would become visible on the wing spar section that goes through the cabin. But since I was building an originally civilian variant, the section of the wing spar was covered with fabric or carpet. However the spar also goes through the wheel wells, where the structure *will* be visible. I thus removed the wing spar completely, and made a new, shorter one from laminated plasticard (photo 8).

For the cockpit seats, I used the two resin seats included in the Koster Ventura kit and modified these accordingly. I rounded off the top of the pilot's seat, cut off the arm rests and

In May 1941, the Norwegian government in exile in London, decided to establish an air route between Britain and neutral Sweden

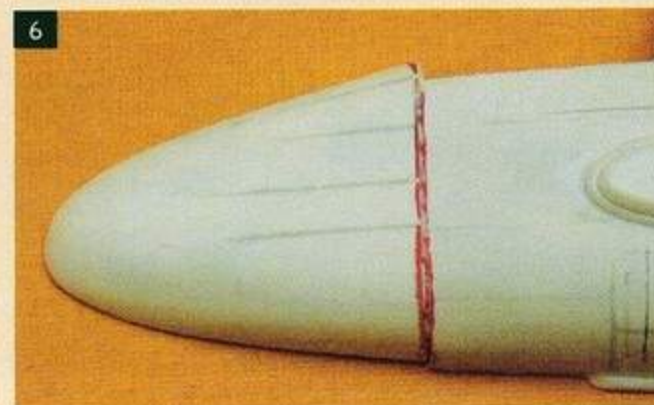
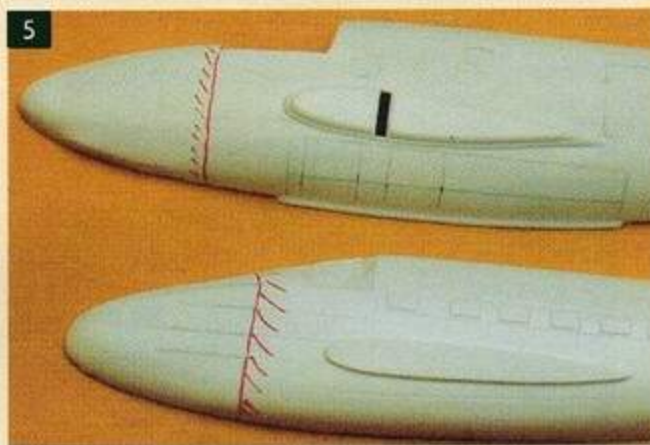
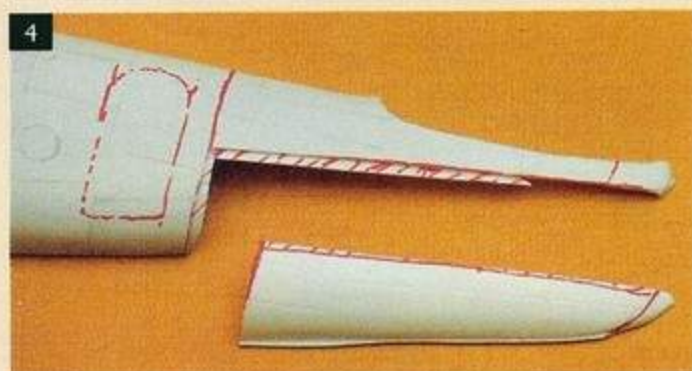
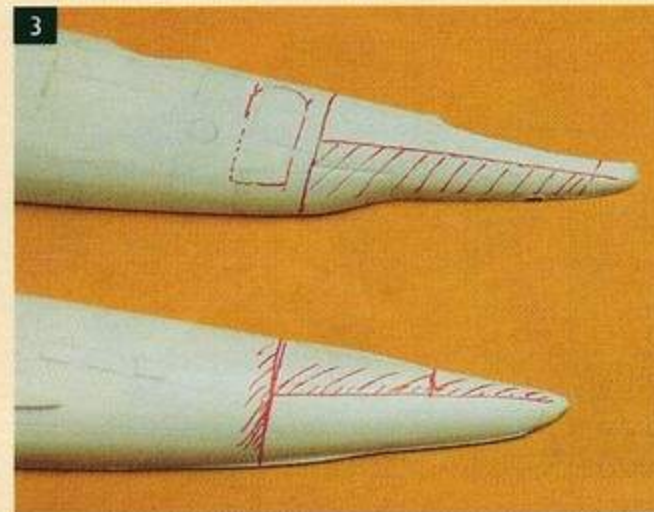
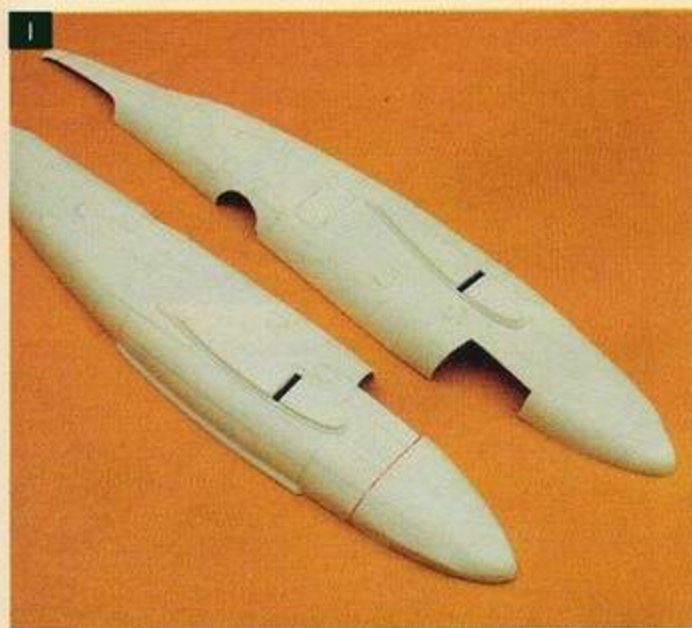
cabin, is moulded integrally with the wall behind the radio operator's position and the cabin, but no other interior detail is included. For the cockpit I could use most of the parts provided for the Ventura. I had to make a new wall behind the cockpit as this is different in the Lodestar. The wall sitting at the wing spar is not fitted in the Lodestar, so I removed this from the top of the wing spar. The cabin floor and a wall at the rear end of the cabin was scratch-built from plasticard.

At this point I started to study photos of the cabin. I discovered that the wing spar was not solid, but built up from a number of diagonal

added new armrests at a lower position. For the co-pilot's seat, I lengthened the back, to the same length as the pilot's seat, and added the armrests (photo 9). The cabin seats I had to scratchbuild completely. I made one seat from plasticard, and used this as a master to cast a number of new seats.

Cockpit

I had little reference to the interior colours for this model. As the original was built as a civilian aircraft, I assumed that the military 'interior green' shade, in any of its variants, was not used. Photographs indicated a light



► colour. Some research concluded that pre-war civilian aircraft like the Douglas DC-3 and the Lockheed Super Electra were painted light grey in the cockpit, so I decided to go for this. I used Humbrol 128 Satin US Compass Grey, on the floor and sidewalls, except for the insulating material areas where I used the slightly lighter grey, Humbrol 64 Matt Light Grey. For the instrument panel and mid console I used Humbrol 33 Matt Black, (photo 10). The hardware boxes moulded into the vacformed sidewalls have very round contours and are not easy to distinguish from the insulating material, but I also painted them black where these appeared to be. For an open cockpit this would not be satisfactory, but on this model where the cockpit windows are small and enclosed, there is not all that much inside the cockpit that can be seen. For this same reason I limited the detailing work in this section.

Cabin

Having finished the cockpit, the passenger cabin was the next step. I started with the radio operator's and navigator's area, in front of the wing spar. I had some photos of the right hand side, showing a small table on the wall and a radio above it. On the left hand side all I knew was that there was a cabinet with some black boxes. Thus I constructed the equipment from scrap plastic. To simulate the knobs and switches on the boxes in the cabinet I chopped up an instrument panel from an F-16 kit that I got from my spares box! It would not be evident from the outside that this old aircraft carried

such sophisticated instruments though! The Ventura kit's radio operator's seat was positioned at the table, (photo 11).

I had no references to the colour inside the cabin but from the b&w photos, I figured out that some kind of tan was probable. I looked through the myriad of my old paint tins to see if I had something that would match the colour that I had as a concept inside my head – and I found one that I felt could be right. This was an old tin of Airfix paint, (remember those?), labelled M9, but I became anxious about the condition of the contents. Luck was on my side, as after a little stirring it got a uniform consistency.

Before the German assault on the Soviet Union in June 1941, they could get to the UK through Russia and Asia, but after the assault this route was closed

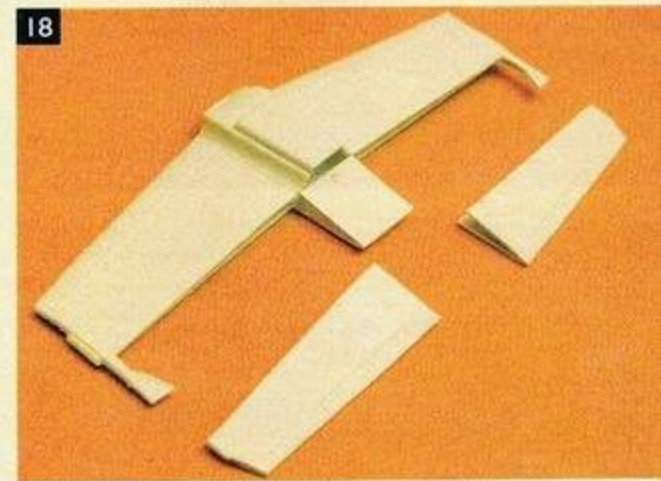
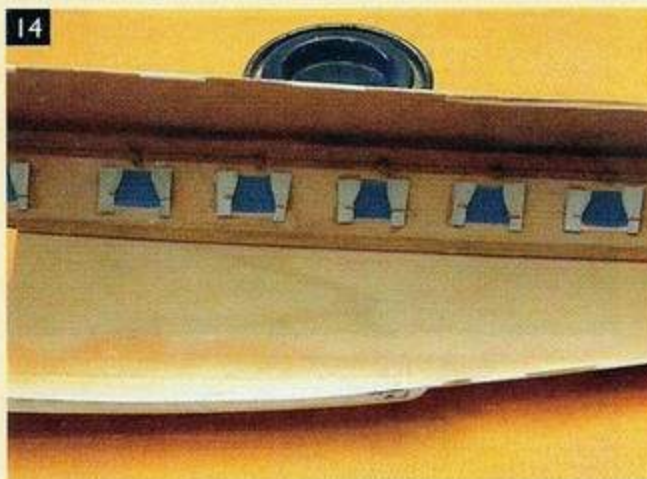
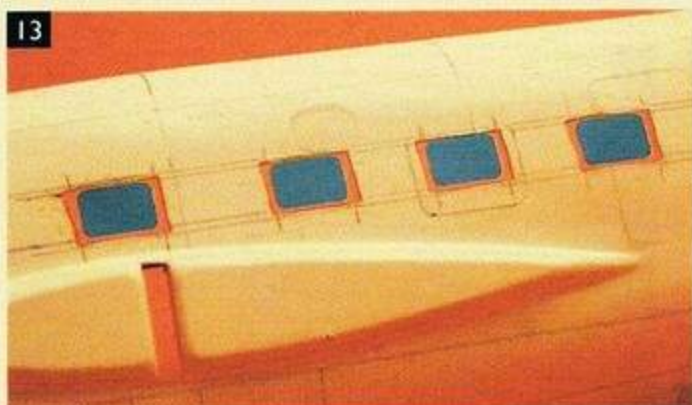
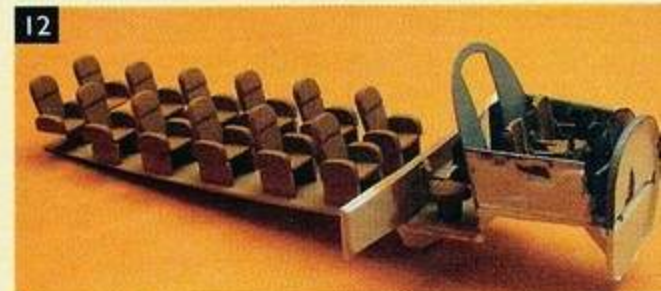
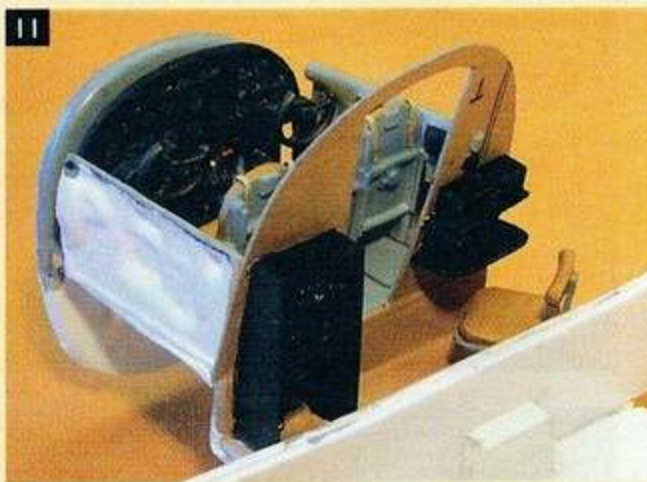
I used the master passenger seat to make a mould, from which I cast twelve new seats in resin. The legs that I had cemented to the master seat would make the resin seats very difficult to drag out of the mould, so these had to go. It would be an easy task to make these later from plastic. In fact I cemented the new legs directly to the cabin floor, making the alignment of these a much simpler task. Since the fuselage tapers towards the rear, the cabin floor was not wide enough to attach the legs for the rearmost seats with the proper distance. So I waited to attach these until the seats were in place.

After having given the cabin floor a coat of Airfix M9 and leaving this to dry overnight, I masked the floor to airbrush Humbrol 93 Matt Desert Yellow on the legs. The cabin seats were airbrushed at the same time. The seats were then cemented to the legs, (photo 12).

I painted the inside of the cabin walls in the same colour as the cabin floor. Some details, like the overhead shelf and a longitudinal padding below the windows, were painted in the darker brown of the seats.

The final step with the cabin was to install the windows. I placed the window openings in fuselage halves on top of a sheet of clear acetate and cut out each window separately.

The clear parts were then positioned into the openings, one by one, and cemented with liquid glue. This does not stick to acetate but it softens the styrene and keeps the acetate pieces in place. Later I mixed some araldite epoxy glue and added small amounts to the window frames from the inside. With the windows now securely fastened it was time to smooth down the window frame joins on the outside. I must admit that I enjoy the challenge of experimenting with new modelling techniques. This time I would try out a set of vinyl window masks, produced by my own Adobe



Illustrator from drawings by David Gibson in far-away Jordan. I placed the masks on the windows, and they would stay there protecting the windows from sanding, and later painting, until the model was nearly finished. So, with the masks in place I could work on the joins without damaging the windows, (photo 13).

With the masks in place, I filled the joins with Milliput. Actually I covered all that was left visible of the transparencies, not bothering to get a smooth join with the vinyl window masks. The modelling technique I was trialling, was to sand down the putty flush with the fuselage, eliminating the join while hoping that the vinyl would stay intact. I know of course that I should have practiced on some scrap plastic or old models first. However I went straight ahead and tried the technique directly on my model. Life gets boring if you don't risk any chances!

Luckily my theory proved good – at least so far. The vinyl masks stayed intact while sanding down the Milliput, and the vinyl itself. I just had to watch out that I did not sand straight through the vinyl. I nearly did on a couple of spots. However I would not know for sure if the technique was usable until I removed the masks after painting.

The last task before I could join the fuselage halves was to make the window curtains. This is not something that I do often while modelling aircraft. I could have done away with this if I had chosen to model one of the other two variants, but this ex-civilian airliner would have had curtains. The way I approached this unproven task was simply to cut out the shape

of the folded curtains from thin plasticard. Then I scribed some marks into each piece to give the impression of folds. I painted the curtains in a tanish-grey colour, and gave them a wash of dark grey heavily thinned to give some depth into the folds. The bands that hold the curtains to the side were cut from thin aluminium, (from a beer can), and painted light brown. Finally the curtains were cemented in place, (photo 14).

The cockpit and cabin were now finished and the next step would be to cement the fuselage halves together. However I decided to open some of the hatches for the baggage compartments. The Lodestar has four hatches, a large one for the nose compartment, one for the compartment under the cockpit and two hatches for the compartments under the cabin floor, (photo 15). Opening the forward hatch would conflict with the presentation of the nose markings, whilst the join between the Ventura and Hudson kits would complicate opening the second hatch. Thus I chose to open the two hatches under the wing root.

The hatch doors were made from an aluminium beer can and sheet styrene, as was the cabin door. I cut out the the size of the doors from the beer can, and bent them to the correct shape. Similarly, I made slightly smaller parts from sheet styrene and cemented these to the aluminium items, on the inside surface. Using a Waldron Punch & Die set, I perforated the plastic items for the luggage compartment hatches before cementing these to the aluminium, (photo 16).

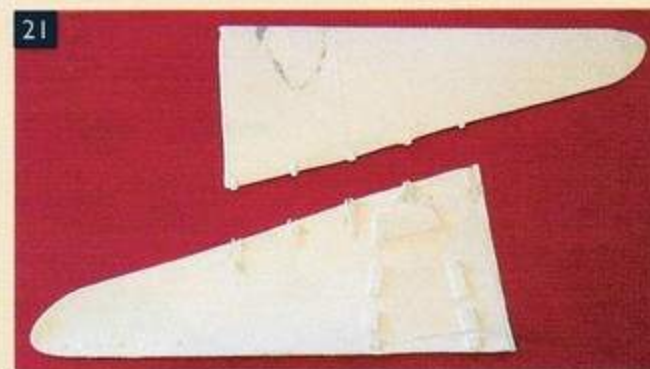
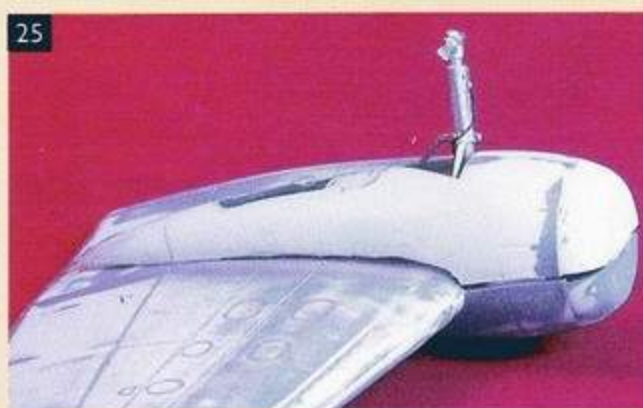
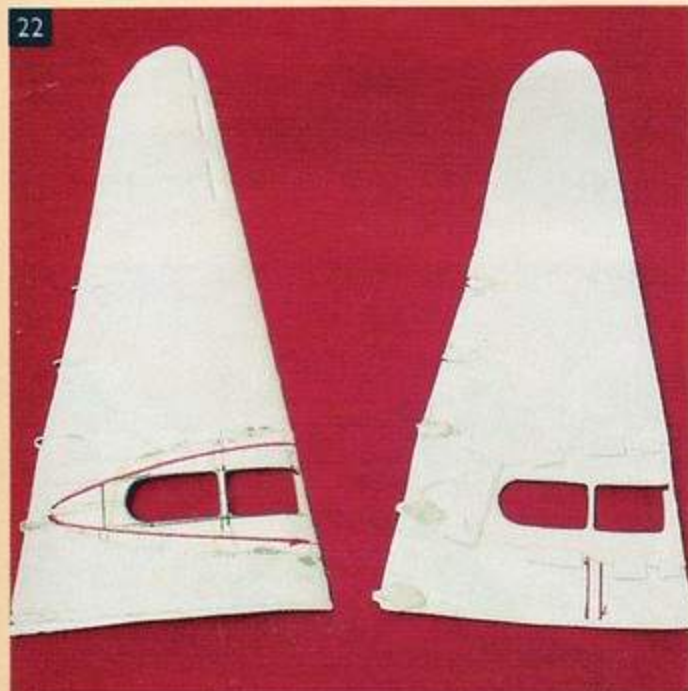
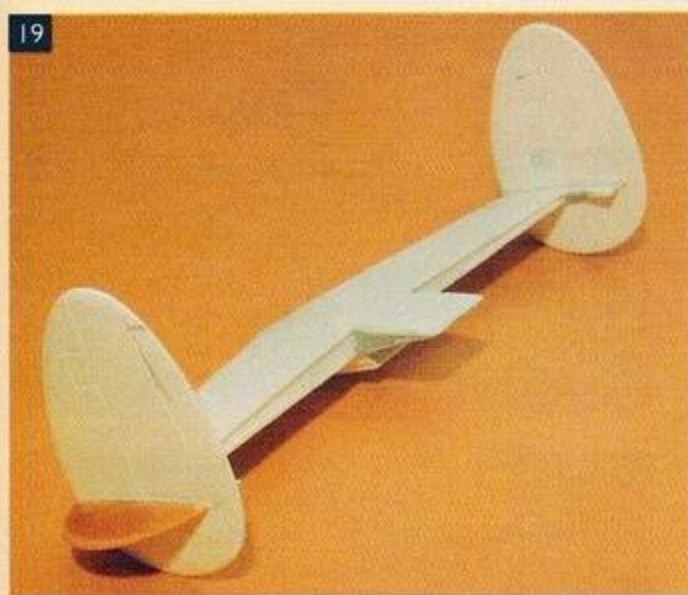
Finally, I had come to the stage when the interior would be hidden between the two fuselage halves. I added plenty of styrene tabs to strengthen the join between the halves. However, especially on the nose and tail section, where the Hudson parts had been used, there were some rather large gaps. I filled these with Araldite epoxy glue, which acted both as a filler and glue. When this was dry, I added Milliput to smooth the joins. A good thing about using Milliput as filler is that this hardens to a consistency similar to the styrene. Furthermore, unlike some other fillers, it does not crack up when scribing into it. Thus it is possible to scribe panel lines that run over both styrene and filler of uniform width and depth.

I could now attach the cockpit transparency, which I took from the Koster kit. With this in place, it became evident that the Sanger Hudson nose was too shallow. I had to add plenty of Milliput to the top of the nose to get the desired shape, (photo 17).

Most of the panel lines from the Ventura fuselage were not appropriate for the Lodestar, and much of it had been sanded down anyway, so I had to scribe new panel lines. Luckily I had a real Lodestar at my local aviation museum, thus I had no problems knowing where to scribe the lines!

Tailplanes

The Ventura's fuselage tail section extends behind the tailplane while for the Lodestar, (like the Hudson), the fuselage tapers towards the tailplane trailing edge. To get the correct



► shape on the model, both the fuselage tail and the lower tailplane half needed surgery.

For the fuselage, I first filled the inside of the tip with Milliput. With the outline curve drawn on the plastic I then cut the tailcone to the correct profile before I shaped the sides so that they met at the edge.

For the tailplane, I removed the root fillet between the elevators. This section was replaced with a piece of flat plastic, which would support the application of Milliput, (photo 18). I cemented the two tailplane halves together and cut out the elevators. The Lodestar, (and the Ventura), have two separate elevators, unlike the Hudson which has one single elevator stretching across the whole span of the tailplane. Finally I attached the fins and the resin tailplane tips, (photo 19).

With the tail section attached to the fuselage, I filled the joins and sanded them smooth. I gave the assembly a coat of Halfords Grey Primer, (which revealed some areas that needed extra filling), followed by sanding and scribing.

Wings

The Lodestar has the same broad chord wings as the Ventura, but it has the smaller engine nacelles of the Hudson. Thus these parts had to be combined. After cutting out the wings from the backing sheet and sanding down the edges, I filled the inside of the vacuum-formed flap guides with Milliput. My plan was to later cut away the flap guides and replace these with the white metal items from the

Sanger kit. Using only Milliput was not a good idea though as it fell off when I cut off the guides. Thus I cemented some scrap plastic on the inside of the flap guides, which stuck much better. The engine fairings and mainwheel housings, that are moulded integrally with the Ventura wings, were now cut away, (photo 20).

The Sanger Hudson has smooth wing surfaces with engine nacelles as separate parts. Using the gaps in the Ventura wings as guides, I cut out sections from the Hudson wings. The Hudson parts were then cemented to the Ventura wings, supported by scrap plastic on the inside, (photo 21). The wings were then left to dry thoroughly. I filled Milliput into the seams and sanded them flush. Panel lines were scribed across the replacement plastic parts. Much of these would be covered by engine fairings, but it was easier to do the scribing now with plain wings than it would be with the engine fairings in place.

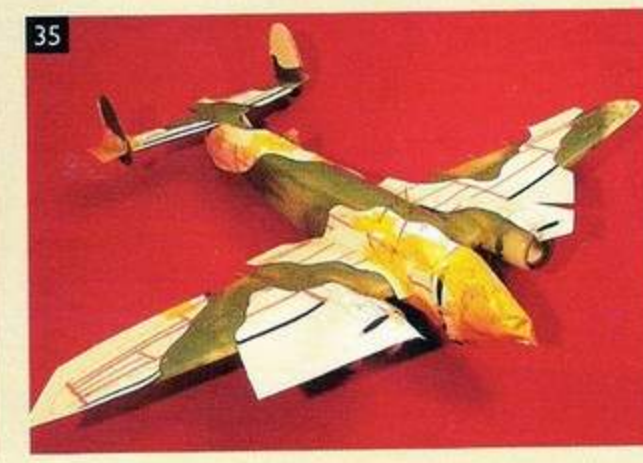
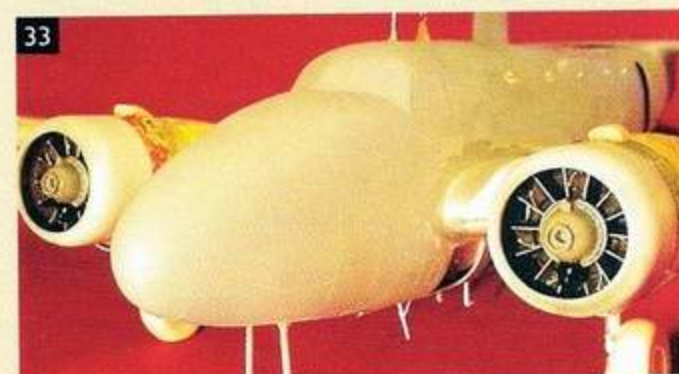
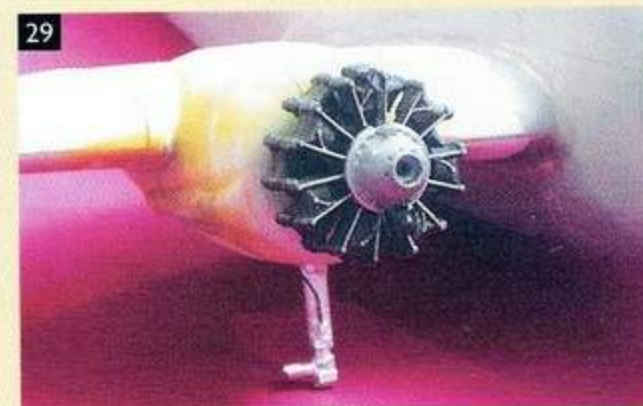
A major challenge was to make new mainwheel wells. The resin parts in the Ventura kit are designed to fit inside the larger Ventura fairings and would not fit the Lodestar. Thus I had to scratchbuild new mainwheel wells. The mainwheel wells are a bit complex since they occupy space both in the engine fairings and in the wings. I could of course cheat by just opening up the engine fairings and leaving them, (like the Classic Airframes' Hudson kit), but I had to do this properly. Thankfully, I had good reference material at hand, in form of a real Lodestar at my local aircraft museum, (at Gardermoen near Oslo). I took my digital camera

and a tripod one Saturday morning and returned home with some fifty photos, all of the starboard wheel well!

I started with the part of the mainwheel wells inside the wing, and finished these before I turned attention to the engine fairings. First I had to locate exactly where the wells would be, then I made two openings in each of the lower wing halves. A strip was left between the two openings, (photo 22). The wing spar goes straight through the wheel wells and divides these into two sections.

The next step was to make the mainwheel well walls. I used sheet styrene for this construction. First I made the wing spar section that goes through the wells. These are not solid but are perforated with holes of various diameters which were punched in to the plastic items. The wing spar sections were then cemented into position on the insides of the upper wing halves. The walls surrounding the rear chambers were then cut out in one piece, bent to shape and cemented in place. On the upper wings, the wing skin forward of the wing spar was cut out to give room to the undercarriage legs and supporting struts, (photo 23). Finally the two wing halves were cemented together, (photo 24).

To continue work on the mainwheel wells I would have to attach the upper part of the engine fairings. The engine nacelles came from the Hudson kit and each nacelle was moulded in a left and a right half, complete with the cowlings for the Pratt & Whitney engine). Cowlings for Wright Cyclone engines are also



included as separate parts. I cemented these together and attached the sub-assemblies to the wings. But I cemented the nacelles to the upper wing halves only. When the glue had dried, I then removed the engine cowlings. Next I split the nacelles horizontally and since the lower parts were not cemented to the wing, these came loose and were put to one side for a while. I could now continue with the main-wheel well interiors.

I cut out the openings for the undercarriage in the lower nacelle part and attached the undercarriage legs in place. I used the white

have parts for the Pratt & Whitney Twin Wasp engine left over, including the cowling and exhausts, to use on my Lockheed model 18-10! [Ed note: Only kit No 449, 'Hudson Mk III, IV, V and VI' and 'PBO-1', offers these extra parts, which will not be found in the first kit, No 448, the 'Hudson Mk I and Model 14'].

Continuing with my Lodestar model, I first cut off the front of the engine cowlings already attached to the model and replaced them with the injection moulded items from the Classic Airframes kit. My previous worries about how to construct the exhausts were now eliminated

from that of the Hudson, but the end result proved to be satisfactory, (photo 27).

The slots in the wings were opened up and 'boxed in'. The openings on the upper surface are positioned further rearwards than the on the lower surface and I made the front and rear walls in the slots curved like on the real aircraft.

After a lot of work the wings were now nearly complete. Only the engines and some details on the undercarriage remained. I decided it was time to attach the wings to the fuselage. I used two-component Araldite Epoxy for the wing-to-fuselage joints as this gave a strong connection and it dried slowly enough to ensure correct alignment. After the Araldite had dried, I first filled the gaps with gap-filling superglue, before I continued with some rounds of filler and sanding, (photo 28).

Engines

The Pratt & Whitney R-1830 Twin Wasp engines came from Engines & Things. I cut off the rear casing so that they could be cemented directly onto the nacelle fronts, but before the engine parts were assembled and attached, I painted them, (photo 29).

The cowlings for the Twin Wasp engines came from the Classic Airframes kit. Before I cemented the cowlings onto the engines, I removed the trailing cowling flaps that were moulded integrally in with the cowlings and were only visible by panel lines. As the 1mm thick plastic was not really scale thickness, I cut out new flaps from my aluminium beer can and positioned them in a slightly 'open' ▶

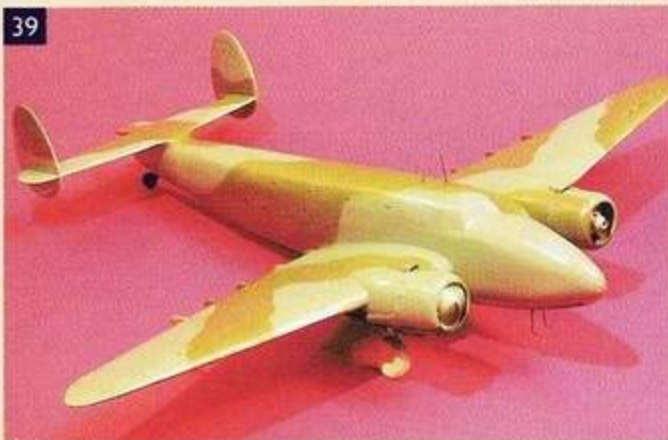
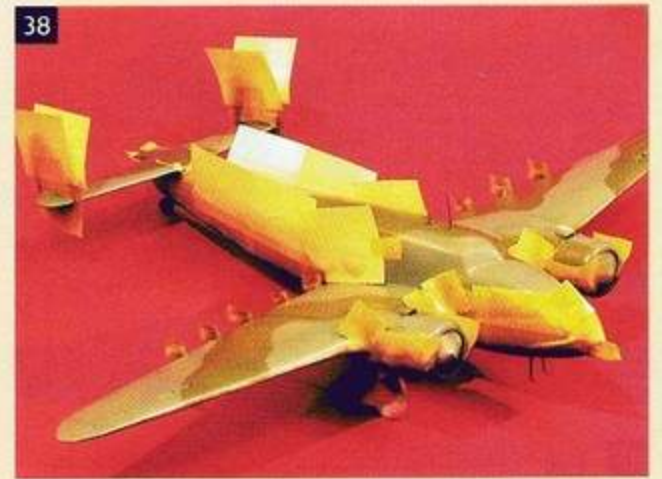
The flights between Leuchars and Bromma were operated at night to avoid being detected by Luftwaffe fighters over Norway

metal legs from the Ventura kit and built up a socket in the wheel well that would fit the attachment of the legs. This was a rather tricky operation as I had to ensure that the legs were positioned at both the correct angle and length, (photo 25). The legs were later detailed with additional struts and brake pipes.

After a visit to my local model shop, I had to rearrange my plans for further construction. Basically, I returned home with a Classic Airframes' Hudson kit. This was not done with the purpose of 'sacrificing parts' for the Lodestar model, but I discovered that if I build the Classic Airframes kit as a Wright Cyclone engined Hudson Mk III, (which was my intention as this was the variant operated by BOAC), I would

with the newly acquired parts. The injection moulded exhaust parts were also taken from the Classic Airframes kit and cemented to the nacelle sides, (photo 26).

The flap actuators had previously been removed from the Koster vacformed wings as I was not overly impressed with these. Neither was I satisfied with the white metal parts included in the Sanger kit. The parts in the Classic Airframes kit however looked very good – but I had to save these for the Hudson model! I thus used the Classic Airframes parts as masters to cast new items in resin which were then cemented to the wings. I had to trim the top off the flap actuators as the wing chord of the Lodestar, (and the Ventura), was different



► position, (photos 30 and 31). The air intakes on the top of the cowlings were resin parts that also came from the Classic Airframes Hudson kit. I could have done the same with the plastic radiators on the undersides, but I did not want to 'sacrifice' these as they would eventually be needed on the Hudson. However, I used the parts as moulds and made copies – simply by heating sheet styrene so that it became soft and wrapping it around the Classic Airframes parts.

Finishing off

The model was now definitively beginning to look like a Lodestar. To finish major construction before preparing it for painting, I first turned my focus to the tail section. The elevators were attached in a lowered position, (photo 32), and I also attached the tailwheel.

Antennas on the upper and lower sides of the fuselage were finally attached. A couple of these came from the Koster kit while the rest were made from scratch, (photo 33). To prevent the antennas breaking, due to low ground clearance, I temporarily attached the mainwheels.

Painting

It was now time for the painting process, the stage that really brings life to the model. The colours used on the BOAC's Sweden run Lodestars have been the subject of a comprehensive study. With different delivery batches being painted differently, it has not been easy to come to certain conclusions. The first two

aircraft, the Model 18-10s, were delivered in the American paint variants of Dark Green, Dark Earth and Sky Gray. However, before entering service, the lower surfaces were repainted in Aluminium. The two aircraft were repainted in 1943, and my research gave me reason to believe that a new camouflage scheme of Dark Green and Ocean Grey was applied, with Night undersurfaces. I used Hannants' Xtracolor enamels for all the camouflage colours and started with Ocean Grey. After the first coat I pre-shaded with Extra Dark Sea Grey along the panel lines before I applied a second coat of Ocean Grey, (photo 34).

With the grey paint dry, I made paint masks from paper and attached these to the model, allowing a 1-2mm gap along the edges, (photo 35). The same procedure was followed with the green paint – first an initial coat of Dark Green, then pre-shading with a dark grey and finally a light top coat of Dark Green, (photo 36).

When the Dark Green had been applied and the paint had dried, I removed the paper masks, (photo 37). It was then time to mask the upper surface colours before application of the underside colour, (photo 38). I used good old Humbrol 33 Matt Black for the Night undersides. No pre-shading was done here, instead I used Humbrol 85 Satin Coal Black for post-shading.

With all camouflage colours applied, I removed the masking for the undersurfaces, (photo 39), and masked out and painted the de-icing boots. These were installed on the

leading edges of the wings, tailplanes and fins, and also inside the wing slots in the rear wall. The de-icing boots should also be black, but I wanted to distinguish the black rubber from the Night underside paint, so to lighten it up, I mixed two parts of Humbrol 33 with one part Humbrol 182 Black Grey.

Markings

As no decals for BOAC Lodestars, (or Hudsons), are available I had to make these myself. Some of the markings, like the stripes on the wings and fuselage and the fin markings, were simply masked-out and painted. I applied Tamiya Flat White first, (photo 40), masked it out and then applied Humbrol 100 Matt Red Brown before finishing off with Xtracolor X122 Insignia Blue.

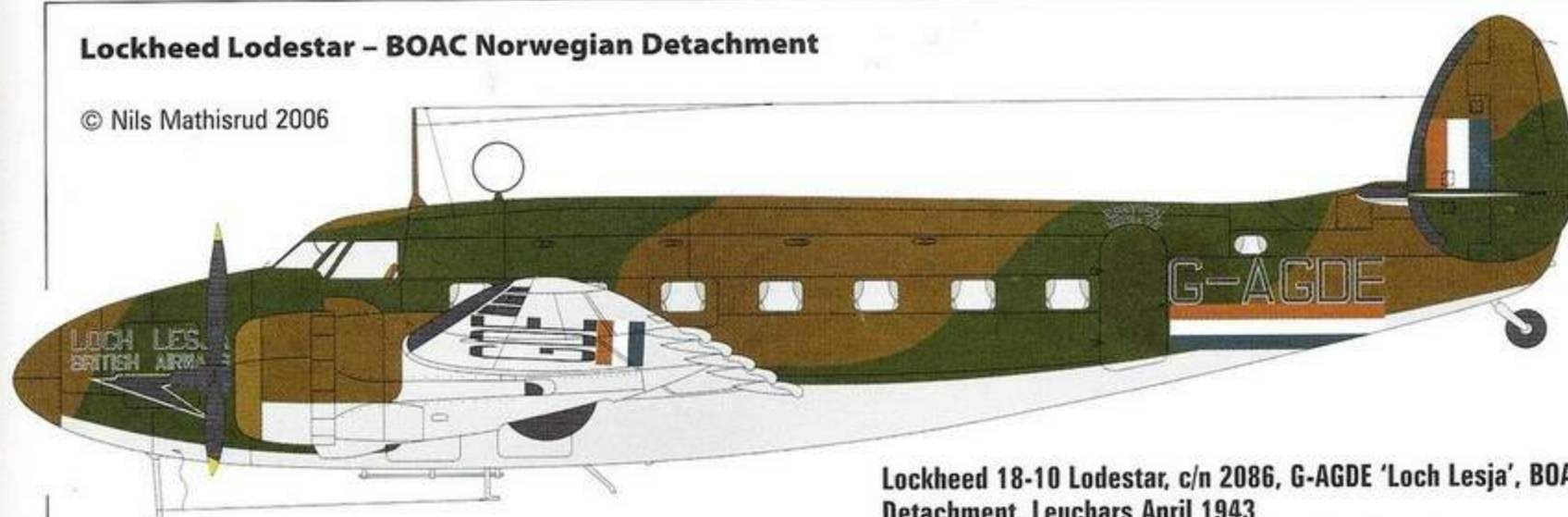
For the code letters and some other small markings I made my own 'artwork', using Adobe Illustrator on my computer, and printed the results on decal paper. The underside letters were in Medium Sea Grey, a colour that is very difficult to reproduce on home printers, so I printed the letters on 'sticky paper' and cut out the letters. The 'sticky paper' was then placed on the model as a mask, (photo 41), and I airbrushed the Medium Sea Grey paint directly onto the model.

The rest of the markings were black, mostly with aluminium outline. I printed the black and aluminium items separately, the black items on a laser printer and the aluminium items on an ALPS printer. The black items were first applied to the model, (photo 42). When this ►



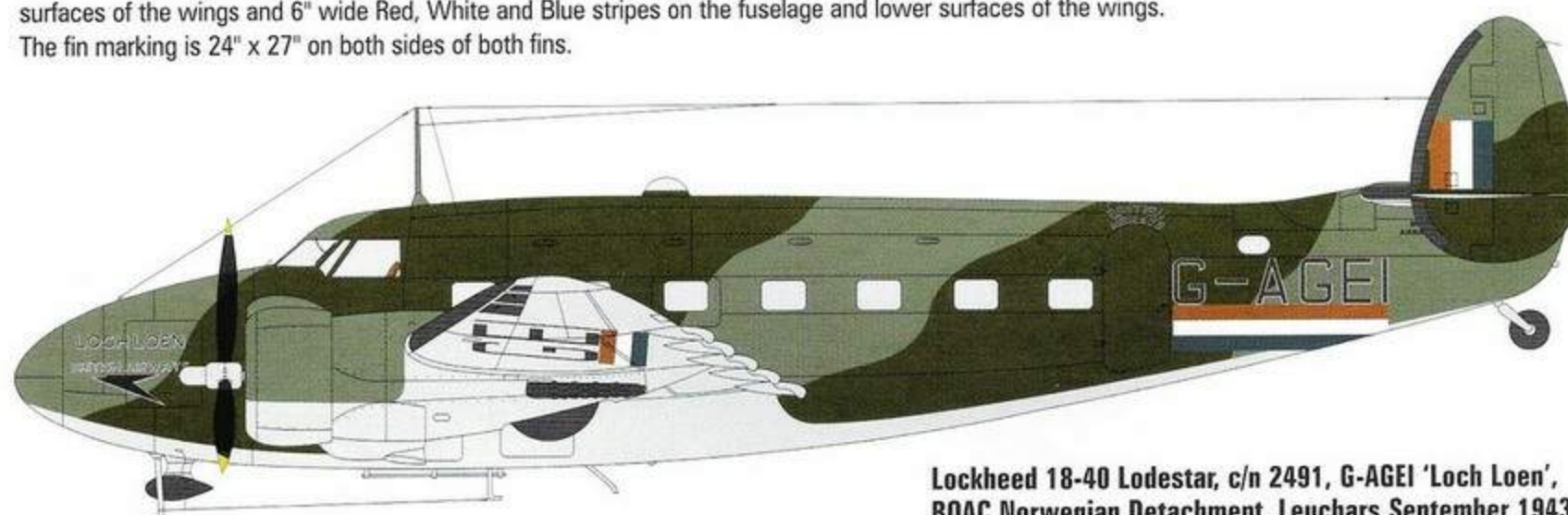
Lockheed Lodestar – BOAC Norwegian Detachment

© Nils Mathisrud 2006



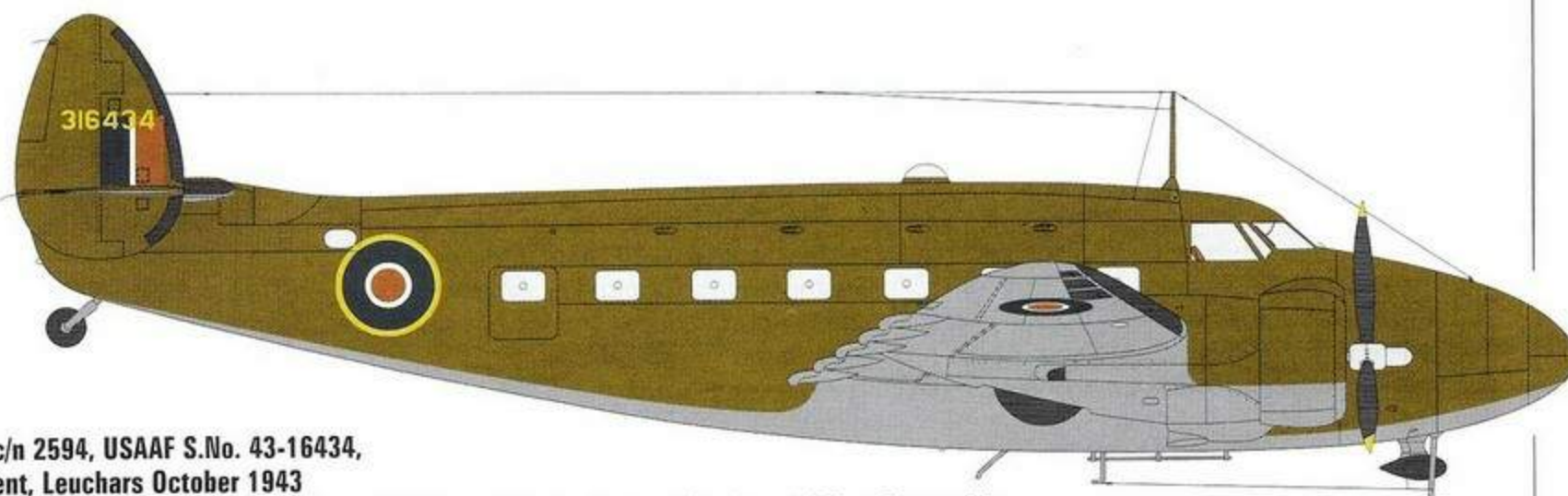
Lockheed 18-10 Lodestar, c/n 2086, G-AGDE 'Loch Lesja', BOAC Norwegian Detachment, Leuchars April 1943

American equivalents to Dark Green and Dark Earth on the upper surfaces. The lower surfaces were originally painted Sky Grey, but were repainted Aluminium before entering service. The front of the engine cowlings are an unknown colour, possibly a light brown. Delivery markings (British roundels) were overpainted with MAP shades of the camouflage colours. Registration letters are 20" high on the fuselage and 48" high on the wings. Registration letters are Night with a 1" Aluminium outline, as are the BOAC speedbird, British Airways lettering and the Loch Lesja name. The registration letters are underlined by 9" wide Red and Blue stripes on the upper surfaces of the wings and 6" wide Red, White and Blue stripes on the fuselage and lower surfaces of the wings. The fin marking is 24" x 27" on both sides of both fins.



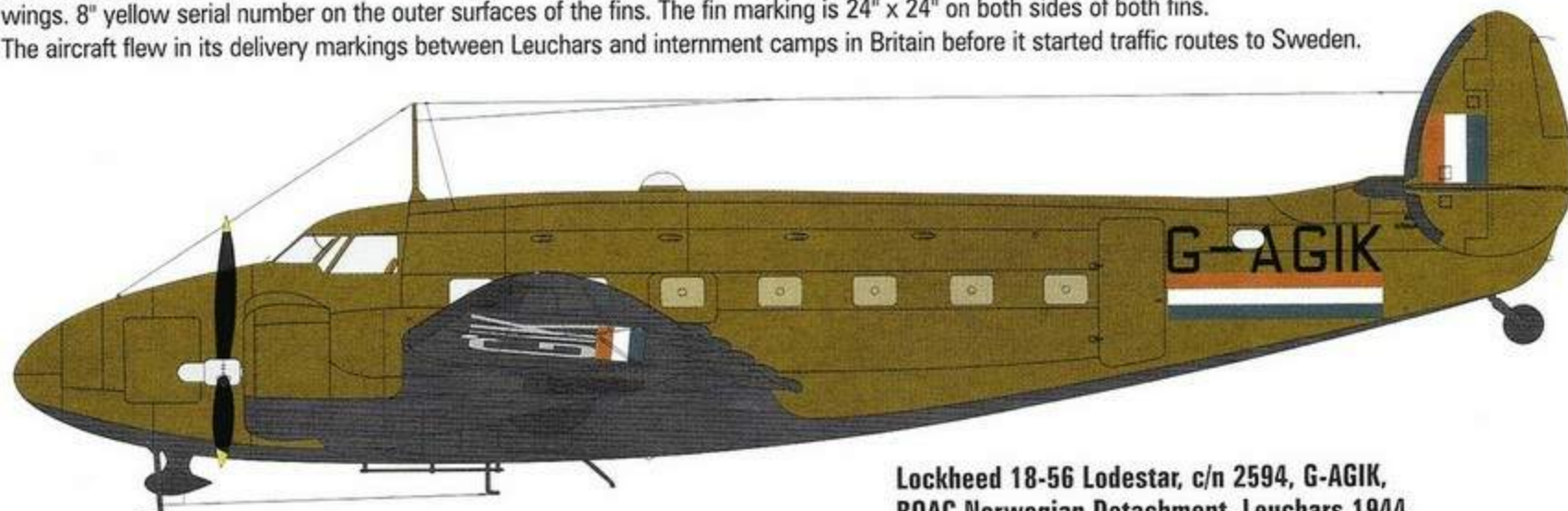
Lockheed 18-40 Lodestar, c/n 2491, G-AGEI 'Loch Loen', BOAC Norwegian Detachment, Leuchars September 1943

Dark Green and Ocean Grey on the upper surfaces with Aluminium lower surfaces. Registration letters are 20" high on the fuselage and 48" high on the wings. Registration letters are Night with a 1" Aluminium outline, as are the BOAC speedbird, British Airways lettering and the Loch Loen name. The registration letters are underlined by 9" wide Red and Blue stripes on the upper surfaces of the wings and 6" wide Red, White and Blue stripes on the fuselage and lower surfaces of the wings. The fin marking is 24" x 27" on both sides of both fins. Beneath the tailplanes are British Overseas Airways Corporation titles in Night.



Lockheed 18-56 Lodestar, c/n 2594, USAAF S.No. 43-16434, BOAC Norwegian Detachment, Leuchars October 1943

Olive Drab 41 upper surfaces with Neutral Gray 43 lower surfaces. British roundels on wings and fuselage. 40" Type C1 roundels on the fuselage, 48" type B roundels on the upper surfaces of the wings and 35" type C roundels on the lower surfaces of the wings. 8" yellow serial number on the outer surfaces of the fins. The fin marking is 24" x 24" on both sides of both fins. The aircraft flew in its delivery markings between Leuchars and internment camps in Britain before it started traffic routes to Sweden.



Lockheed 18-56 Lodestar, c/n 2594, G-AGIK, BOAC Norwegian Detachment, Leuchars 1944

Olive Drab 41 upper surfaces with Night lower surfaces. Registration letters are Night on the fuselage and upper surfaces of the wings and Light Grey on the lower surfaces of the wings (without Aluminium outline). The letters are 20" high on the fuselage and 48" high on the wings. The registration letters are underlined by 9" wide Red and Blue stripes on the upper surfaces of the wings and 6" wide Red, White and Blue stripes on the fuselage and lower surfaces of the wings. The fin marking is 24" x 27" on both sides of both fins. Cabin windows are blanked off. Beneath the tailplanes are British Overseas Airways Corporation titles in Night.



► had dried overnight, I added the aluminium items on top, (photo 43). The same technique was done for the nose markings. An Aluminium outline was also added to the Medium Sea Grey underside letters.

Final details

With all the markings in place it was time to add the final details. I had to find a new set of mainwheels as the Ventura ones are too large for the Lodestar and the wheels in the Sanger Hudson kit are too small! I had a set of spare wheels from the CMK resin detail set for the Hasegawa Arado Ar 234 kit, which are the correct diameter for the Lodestar. All I had to do was to add a hub plate and to sand down the bulges on the flattened side to make them more realistic. As I had cemented the wheels on at an earlier stage to allow the ground clearance for the underside antennas, I removed the wheels and made the modifications before painting and re attachment, (photo 44).

I made a set of mainwheel leg cover plates from sheet styrene. This was a box construction that was attached to the front of each main gear leg.

The new cabin door and luggage compartment hatches were painted and attached. On



the cabin door I applied a small decal on the inside with the British Airways titles and the Speedbird in silver, (photo 45).

I used the propellers from the Sanger kit. These needed some filler and sanding before I painted them black, (photo 46). 'Hedgehog' flame dampers were attached to the exhaust outlets. These came from an MDC conversion set for Douglas A-20 Night Intruder Boston/Havoc, (photo 47). Antenna wires were applied on the upper and lower sides made from tinted invisible thread.

The model was completed in time for the 2005 IPMS Norway Nationals, where it won a Bronze Medal in its Class, as well as the IPMS Sweden Trophy. After adding some figures and a fuel truck to the base, I entered the model in the IPMS(UK) Scale ModelWorld 'National Championships' where it got a 'Commended' in the Aircraft Diorama Class. **MAN**





Three of the refurbished ex-Armée de l'Air T-6G Harvards at Tires, Portugal, after being camouflaged, awaiting their ferry flight to Biafra (All photos Luis Tavares via J M Vidal)

Bush War Harvards

Mike Robson tells the real story of those mysterious Biafran Harvards...

Political events in Nigeria during the mid-1960s led to the eastern part of the country seceding from the federation to form the breakaway state of Biafra. The new state soon found itself ranged against the second largest army on the African continent. Well-equipped, largely from western sources, the Nigerians could field an impressive military machine and numbered many thousands of troops under arms.

Biafra, whilst unable to compare with Nigeria's military might was, by no means, an adversary that could be written off lightly. The call to arms received an enthusiastic response and, as the war developed, Biafra was never short of patriots ready to take up arms in defence of their homeland. She had a well trained and highly motivated officer cadre which was well able to conduct a military campaign. What she lacked was the modern equipment to fight a war. Whilst it could hardly claim the number of personnel or the impressive complement of aircraft as could the federal Nigerian side, the air component of the secessionist state of Biafra was forged into a tiny but well-organised force although, sadly, it was not sufficiently effective in the end to stop the advance of the numerically superior Nigerian forces.

The Ibos of Biafra are natural administrators with a passion for organisation, and even in the darkest days of the war this innate quality never deserted them. Many are the stories of



Line up of some of the former Armée de l'Air T-6Gs at Tires, Portugal awaiting refurbishment. Identifiable airframes include 51-14959, 51-15046, 51-15083 and 50-1306

foreign emissaries arriving at Biafra's Uli airstrip at the dead of night with Nigerian bombs falling all around, only to find immaculately uniformed Biafran immigration officials assiduously following the proper procedures to the letter! Even in adversity, an air force took shape although, with few aircraft and rarely more than twenty indigenous pilots, it was supplemented on an irregular basis by itinerant mercenaries.

The pre-war Nigerian Air Force comprised about 25% Ibo officers and men. Following the 1966 coup when stirrings of revolt began to be heard in the East, many Ibo officers stationed in the West began to consider their position and, in extreme instances, to fear for their lives. In fact, the more radical individuals

amongst the Nigerian armed forces talked quite openly about an ethnic cleansing programme to purge the Ibos from the army and air force. As the situation became more and more volatile, many Ibo personnel thought it wise to return to their homeland in the East before matters got out of hand.

August Okpe, an Ibo pilot who was later to gain recognition as the first Biafran to be awarded the Military Cross, had just returned as a lieutenant from flight training in Canada. In an interview he relates an increasing number of witch hunts which were taking place among air force ranks and, finally, came to the conclusion that his position was neither safe nor any longer tenable. Fortunately, the cama-



One of the T-6Gs after being painted in the unique 'Biafran' camouflage scheme. Note the complete absence of any national markings or serial numbers, photographed at Tires, Portugal in July 1969

raderie amongst the pilots transgressed tribal politics and two of his non-Ibo colleagues agreed to fly him out of the West to the city of Jos where the State Governor was known to support the Ibo cause. In July 1966 Okpe was evacuated secretly in a Nigerian Air Force Dornier Do 27 with fellow Ibo pilots Godwin Ezeilo, Elendu Ukeje and Sam Omeruah. From Jos they were smuggled aboard a train to Enugu, spending the journey confined inside the steam train's water tank! On arrival at

its search for arms and aircraft. Based largely in the Portuguese capital, Lisbon, but also in Paris and Geneva and active all over the continent, Biafran emissaries established a number of organisations, often little more than 'paper' companies to facilitate the clandestine purchase of arms. One of these was the impressive-sounding 'Biafran Historical Research', quartered at 33 Rue Galilee in Paris, which, of course, had little to do with history, or research for that matter! Lamentably, with little experi-

'The period 1967 to 1969 saw the Biafrans mustering a motley collection of aircraft including... Invaders... Mitchells... a Dove and a collection of helicopters'

Enugu, the State capital, they joined other refugee pilots from the Nigerian Air Force and Nigeria Airways including Ibikare 'Ibi' Allwell-Brown, (later to be shot down on active service), and his elder brother, Bara.

Even at this early stage, twelve months before secession took place, plans were already being made in the East for the establishment of a military organisation and the pilots were soon absorbed into a new body called Eastern Command which controlled Biafran forces on land, sea and air. The air component was put under the command of Army Colonel Louis Chode Sokei.

Having announced her secession in May 1967, Biafra was isolated both politically and economically from the rest of the world. Biafrans were regarded as 'rebels' by the federal Nigerian government. In the early stages, the only diplomatic recognition enjoyed by the new nation came from Haiti and Zambia, encouraging no doubt, but of doubtful value in practical terms.

Biafra was not in any position to obtain military equipment through conventional channels and, as fighting developed, was obliged to seek aircraft and military equipment on the 'open market', as and where she could, often venturing into the shadowy and clandestine world of the arms traders. This being the case, it has proved by no means easy to find any official documentation about how Biafra gathered her air force, but a fascinating picture emerges as to how this nation armed itself and went on to survive as long as it did.

Biafra sent its representatives to Europe in



Another Biafran T-6G after being camouflaged at Tires. Each one was painted in a different pattern

ence of commercial matters, these purchasing organisations were often grossly overcharged, supplied with inappropriate equipment and, in more than one case, fell victim to unscrupulous traders who took their money and failed to deliver the goods.

Many observers were highly critical of the activities of some of Biafra's representatives, suggesting that they were little more than playboys, squandering government money in staying at expensive hotels, purchasing ostentatious cars and generally living it up in the capitals of Europe.

The period 1967 to 1969 saw the Biafrans mustering a motley collection of aircraft including two Douglas A-26 Invaders, two North American B-25 Mitchells, a DH Dove and a collection of helicopters, including several 'liberat-

ed' from Bristow Helicopters who had been operating in Nigeria in support of the oil industry. They even hijacked a Fokker F.27 from Nigeria Airways which was used in a disastrous attempt to bomb the capital, Lagos.

Amongst the final additions to the Biafran Air Force were two North American T-6 Harvard armed trainers which arrived during November 1969, although, unfortunately, too late to turn the tide as Biafra was being backed further and further into a corner by advancing Federal Nigerian forces. Many have been the rumours about where these Harvards came from or how many actually made it to Biafra. What follows is the true story, researched over a number of years with first hand contributions from some of the personnel involved.

Biafran Harvards

At the beginning of 1964, more than 150 T-6s were offered for sale by the *Armée de l'Air* from stocks held at Amberieu. Sixteen of these were purchased by intermediaries representing Biafran interests. Twelve were delivered to SEAMA's, (*Sociedade de Exploracao de Aerodromos e Manutencao de Aeronaves SARL*), repair facility at Tires airport, near Cascais in Portugal in June 1969 for refurbishment and repainting. (see accompanying table)

During 1968, four ex-Portuguese Air Force Reserve pilots were contracted to fly the T-6s in the Biafran Air Force. They were Artur Alves Pereira, Gil Pinto de Sousa, Jose Eduardo Peralta and Armando Cro Bras.

The contract included a salary for each pilot of \$1000 per month whenever outside Biafra

which was increased to \$3000 per month for service 'In Theatre'. There was provision for additional bonuses for special missions such as attacks on NAF MiG bases, oil installations, military columns etc. Each pilot was to be paid \$1000 for the delivery flight.

Check flying of the refurbished machines from Tires commenced in July 1969. Pereira was designated to lead the operation and two engineers, Faustino Borralho and Jorge Cancio, were recruited at the same time. A Dornier Do 28, D-IBIF, was purchased around the same time for undisclosed use in Biafra and seems to have been flown as a liaison aircraft by Fred Herz, (another of Biafra's B-25 mercenary pilots), for internal flights in Portugal before being involved in an accident which wiped off the undercarriage.

The T-6s were painted a matt tan on all

► surfaces with patches of matt olive drab outlined in a very dark green. The canopy frame, radio mast, propeller blades and hubs were natural metal. No serials or markings of any type were carried when they left Portugal. The camouflage pattern was not consistent between aircraft. Despite a great deal of speculation as to how these aircraft were marked whilst in Biafra, surviving pilot's accounts confirm that, at no time, did they carry either serial numbers or national markings.

Four T-6s, 51-14798, 51-14810, 51-14873 and 51-15051 were shipped by sea to Bissalanca airport, Bissau, in what was then Portuguese Guinea, arriving in late September 1969.

After some disagreement with the other three pilots, Armando Cro Bras decided to leave the group, but before leaving Portugal he denounced the operation to the Portuguese political police, (PIDE), who informed the Military Commander of Guinea, General Antonio de Spínola. The Portuguese government was initially against the operation, thinking that it was ill-conceived and with little chance of success and, as a result, was reluctant to allow the aircraft to leave from Bissalanca if they were to be flown by Portuguese nationals.

Pinto de Sousa and Alves Pereira, in their earlier days in the Portuguese Air Force had become friendly with *Coronel Piloto* Aviador Manuel Diogo Neto, Commanding Officer of BA-12 at Bissalanca, and eventually persuaded him to back the operation but only after the intervention of a *Capt* Manuel Reis, a Portuguese pilot who flew for the shadowy company, 'Phoenix Airways', who promised that he would ensure the pilots' return from Biafra after they had delivered the T-6s. Diogo Neto thus



The Dornier Do 28, D-IBIF, used for liaison work before its accident, which wiped off the undercarriage...

arranged for FAP engineers to fit ferry tanks in the rear cockpits of the aircraft and prepare them for the last leg of their journey.

Finally, early in October 1969, having received approval from the Lisbon government, three of the aircraft took off for Abidjan, Ivory Coast, piloted by Pinto de Sousa, Alves Pereira and Peralta. Pinto de Sousa takes up the story.

"In the beginning we had agreed to follow the coastline but, after passing Sierra Leone and, after some time, the coast of Liberia, I came to the conclusion that, if we carried on with that plan we wouldn't have enough fuel to reach Sassandra, our landfall in the Ivory Coast. However, we arrived at Sassandra with the fuel tanks completely empty. The indicators

read zero and I checked with a dip stick and it came out dry. I probably had enough fuel for two or three more minutes at the maximum. Alves Pereira recalls asking an Ivorian who approached him on the airstrip and asked him to confirm that he had indeed landed in Sassandra and was relieved to find that he had! Reliving the events of that time, Alves Pereira says that 'we could not have been normal in our heads!'

At Abidjan Captain Reis and Borralho were expecting me. I was informed by Reis that Alves Pereira had experienced problems with the engine of his aircraft and Peralta had had problems with his radio and they had both returned to Bissau. Reis arranged my return to Bissau when he returned from Biafra. Back

'Finally we left Abidjan in the T-6s with our destination Uli in Biafra to arrive after sunset.'



Artur Alves Pereira and a Biafran mechanic working on one of the T-6Gs at Uga Strip, Biafra

at Bissau I met my friend Diego Neto who told me that he was very happy that everything had gone alright and that he would report to the authorities that the trip was feasible and that he had allowed a pilot to fly it and he had successfully done it. Afterwards, kind of joking, he told me that had anything gone wrong, he would have said that I had escaped with the aircraft".

The three left Bissau with full tanks and a supply of oranges to sustain them during the flight! They crossed the Republic of Guinea at night, flying high to avoid extensive concentrations of cumulus, running the engines on a very lean mixture to conserve fuel. As they entered Sierra Leone airspace, daylight was breaking, and after overflying Liberia they turned landwards to touch down in Sassandra. From here it was a relatively short hop to Abidjan where Borralho, Cancio and Jose da Cunha Pignatelli, Cro's replacement, were waiting for them.

News from Biafra was not encouraging. Alves Pereira and Pinto de Sousa decided to hitch a lift to Biafra in one of the airlift's Super Constellations and evaluate the operational situation at first hand. Peralta, anxious about what lay ahead, especially the reports from Reis about the Nigerian anti-aircraft batteries, tried to convince the Biafrans that he would be best employed setting up a training school in Abidjan for Biafran pilots but the Air Force Command were not convinced so he returned to Lisbon. His aircraft was abandoned in Abidjan

where it remained until after the war.

Alves Pereira, Pinto de Sousa and Pignatelli left Abidjan late in October, destination Biafra. Alves Pereira continues the saga.

"Finally we left Abidjan in the T-6s with our destination Uli in Biafra to arrive after sunset. The engineers had left before in a Super Constellation and we had arranged for them to be in the Uli control tower at our ETA. My route was straight to Takoradi in Ghana, over the ocean abeam Togo and Benin and, thereafter, direct to the Niger mouth, to a swamp area called Escravos. My plan was, if it was night time and I could see the river, to turn north, tune to the Uli beacon, and turn left and then I would be at Uli. Bad luck struck when the

again and I landed. The aeroplane was immediately pushed by hand to a shelter. I was pushed inside a bunker and I could just hear air raid, air raid!' It was true. The 'intruder', a Nigerian Air Force DC-3, was bombing Uli when I landed. Pignatelli landed later. I was already in despair when I heard the T-6 engine noise. 'Lights on! Lights on!' I shouted and then he landed".

De Sousa's flight was considerably more eventful. During the leg from Abidjan to Uli, his ADF became unserviceable and, flying by dead reckoning without the benefit of any ground references, he soon became lost. In such circumstances, it was virtually impossible for him to locate Uli and it was now dark. He made some 'Mayday' calls but eventually his engine stopped through lack of fuel. De Sousa had little alternative but to bail out. He made a successful descent, landing some 125 miles south of Keffi. As daylight dawned he was spotted and reported to the Nigerian police.

After being interrogated locally, (he was lucky not to have been executed on the spot), he was sent to Lagos where his interrogation

pilots made a low pass over Biafran Air Force HQ followed by a loop and a slow roll in loose formation. The runway at Uga was narrow but long enough and, to avoid it being spotted by Nigerian Air Force MiG-17s, was camouflaged by tree fronds. The strip was equipped with reflectors for night take-offs and goose neck flares for landing. Aircraft were pushed under the tree canopy to avoid telltale dust clouds and covered with palm leaves. During their short sojourn in Biafra, the T-6s operated mainly from Uga but occasionally from Uli and an unpaved strip at Umuahia.

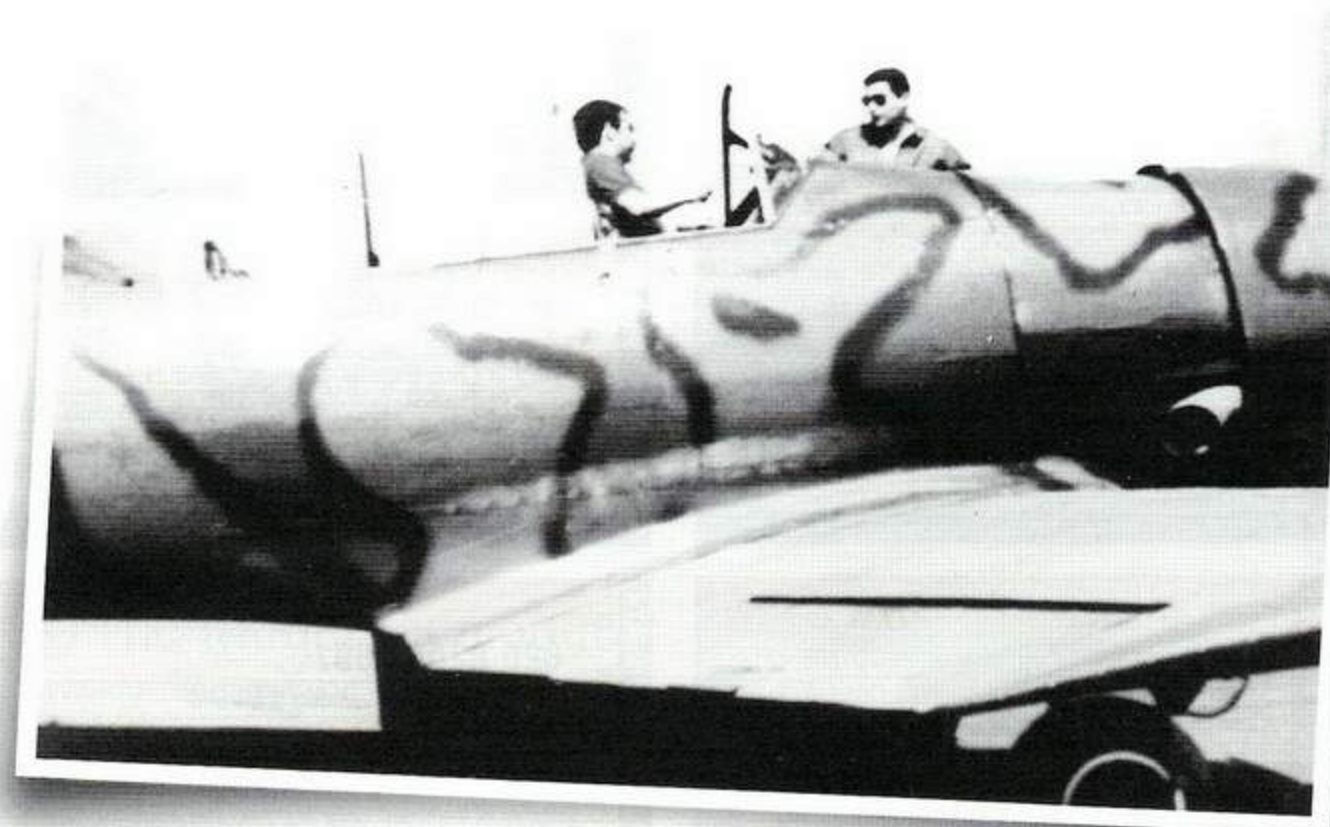
The operational record of the two aircraft was extremely limited. Arriving too late to have any appreciable effect on the progress of the war, the T-6s were little used and suffered problems due, amongst other things, to the lack of availability of the high octane fuel that they needed. At the end of the war, one T-6, (c/n 182-497), was abandoned, still in flying condition, at Uli airstrip where it was captured by the Nigerians and flown to Lagos by Belgian mercenary Francois Reip. There it remained on display until the spring of 1972 after which it was allowed to become derelict.

Type	Adl'Air serial	USAF serial	c/n
T-6G-NT	1306	50-1306	168-570
T-6G-1-NH	14770	51-14770	182-457
T-6G-1-NH	14794	51-14794	182-481
T-6G-1-NH	14798	51-14798	182-485
T-6G-1-NH	14800	51-14800	182-487
T-6G-1-NH	14810	51-14810	182-497
T-6G-1-NH	14873	51-14873	182-560
T-6G-1-NH	14959	51-14959	182-646
T-6G-1-NH	14991	51-14991	182-678
T-6G-1-NH	15046	51-15046	182-733
T-6G-1-NH	15051	51-15051	182-738
T-6G-1-NH	15083	51-15083	182-770

Niger River was overcast with a layer of low stratus clouds and, unaware, I drifted to the west and started being shot at by anti-aircraft guns. I turned again east and, engine in idle power, I descended to 2000ft, tuned to the Uli beacon which was on the air and turned in. The blackout was complete and I called in English and Portuguese asking for the runway lights to be lit. Suddenly, on my left side, around 10 o'clock, I saw the runway. There was complete radio silence".

One story claims that the officer detailed to await their arrival and switch on the lights had been at a party and had forgotten to get out to the airstrip!

"At about 400ft on finals the runway lights went off and I started a go-around. I started screaming and shouting in Portuguese and English, asking for the runway lights to be switched on again. I flew another circuit and just prayed to God I would not lose sight of the runway. The runway lights were switched on



One of the camouflaged T-6Gs photographed at Tires prior to its deployment to Biafra

proceeded, which de Sousa described as 'horrific' with threats to kill him. A police search of the wreckage revealed his FAP identity card which he had failed to hand back. He was officially an on-duty NCO in the Portuguese Air Force, although, inevitably, this was strenuously denied by the Portuguese government. The Nigerians tried to get de Sousa to admit he was a mercenary. Still maintaining that he was simply a ferry pilot, in February 1970, de Sousa was sent to jail, for four years and ten months. In all that time he was never brought to trial but, fortunately, maintains that he was not mistreated. He was eventually released and deported to Portugal.

The morning after their arrival at Uli, Pignatelli and Alves Pereira continued their journey cross country to the strip at Uga where the T-6s were to be based. On the way, the two

The second one had been prepared by Alves Pereira as a 'getaway' mount. In company with Biafran pilot, Larry Obiche, Pereira flew out of Biafra on 9 January 1970 bound for Libreville in Gabon, thus ending this chapter in the T-6 saga. There is a report that this aircraft was eventually assimilated into the Gabonese Air Force or into Gabon's Presidential Guard.

What became of the Harvard pilots after the war? Artur Alves Pereira joined TAP, (*Transportes Aereos Portugueses*), and became an A320 Airbus captain. Jose da Cunha Pignatelli rejoined the Portuguese Air Force for a time after which he flew executive aircraft for a number of concerns, mainly in Switzerland. Following a somewhat troubled private life he committed suicide in 1983. Gil Pinto da Sousa was last heard of flying Dornier Do 228s in the Azores... **MAM**



Artur Alves Pereira at Uga Strip with Biafran Air Force Officers

In Print

Gifts of War – Spitfires and other presentation aircraft in two World Wars

Book of the month

This 450pp, hard-back tome basically covers all the Spitfires that carried presentation names 'paid' for by money collected in cities, towns, villages, work places, shops and associations throughout the United Kingdom and what was then referred to as the Dominions and Colonies, as part of the so-called 'Spitfire Fund'.

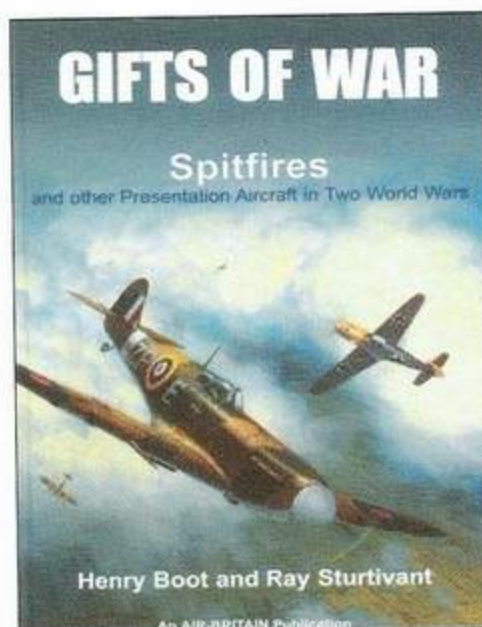
£5,000.00, (in reality not the true cost of a Spitfire but a figure deemed suitable), would 'buy' the privilege of having a presentation name applied to a Spitfire, (or indeed any other aircraft type), and by the end of war over £14 million had been donated!

Henry Boot and Ray Sturtivant have done a truly amazing job in

tracking down, identifying, listing, describing the operational service and in so many cases providing a photograph, of the hundreds of Spitfires, Hurricanes and other aircraft types that carried presentation names during World War Two.

I have got to be honest I am still working my way through the book, and admittedly am being led somewhat from one wonderful photograph to another, but from whatever part of the UK you come, there will almost certainly have been a presentation machine with a name that is local to you on it!

David Howley has provided some sixty full colour profiles, mainly of Spitfires, but with an interesting smattering of Hurricanes and Whirlwinds and individual examples of a Beaufighter, a Defiant, a Wellington Mk Ic, a



by Henry Boot and Ray Sturtivant
Air-Britain Publication
UK price £55.00

night fighter Fulmar and even a Dragon Rapide!

This is a reference book par excellence, which must have taken years to compile, which helps to explain the price tag. I know that £55.00 is not cheap, but if you divide into that cost the thousands of hours of research that went into the book, the fascinating information that it contains and the hundreds of inspirational photographs you'll want to refer to time and time again, then it makes you wonder how they could have produced it so inexpensively!

This is a perfect birthday gift book, to yourself, from an adoring memsahib, partner or offspring, but if you haven't got a birthday coming up soon enough, just buy it anyway... the mortgage can wait!

Unreservedly recommended.

Neil Robinson

Thanks to The Aviation Book Centre, Stoke Golding, for the review copy.

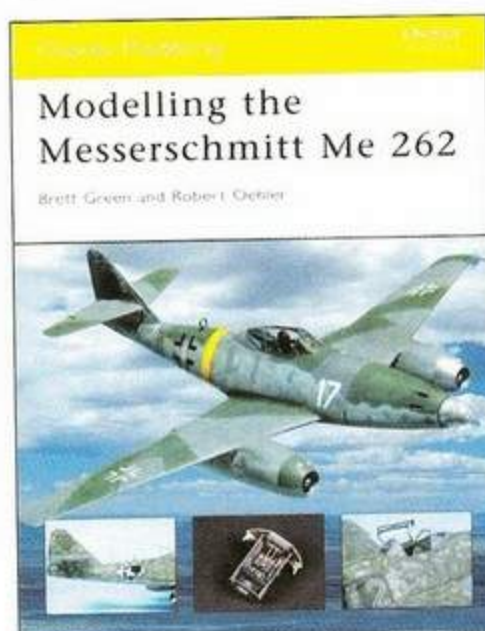
Modelling the Messerschmitt Me 262

This latest Osprey Modelling 'How To' is number 12 in their line up and joins the ranks of the previous titles in this excellent series. Again this volume utilises a combination of step-by-step 'build' photographs and digitised and manipulated images of the beautifully made and finished models, to convey to the reader the knowledge necessary to produce any one of several outstanding projects, ranging from 1/72 through to 1/32 scale.

The projects featured include a super-detailed Revell 1/72 Me 262A-1a; two modified and super-detailed Tamiya 1/48 Me 262A-1as; another Tamiya 1/48 Me 262, but this time converted into a photo recce Me 262A-1a/U3; a Dragon 1/48 Me 262B-1a/U1 night fighter; and finally a Hasegawa 1/32 Me 262A-1a in a superb unpainted natural metal finish. Presumably, the book was prepared and published before the Trumpeter 1/32 had been released as there is no reference to this manufacturer's product.

Overall, an inspiring book that shows the skills and ideas required to produce stunning models, of various Me 262 sub-types, using imagination and a variety of aftermarket resin super-detailing and conversion sets, to the highest quality.

The models are wonderfully



by Brett Green and Robert Oehler
Osprey publishing
UK price £12.99

displayed and enhanced by additional work using computer software to add realistic 'back drops' to the finished items, which of course is a different ball game altogether but offers some ideas of what can be done after the models are made.

Another impressive addition to Osprey's line up and one that should be a hot favourite amongst WW II Luftwaffe model makers everywhere.

Des Knock

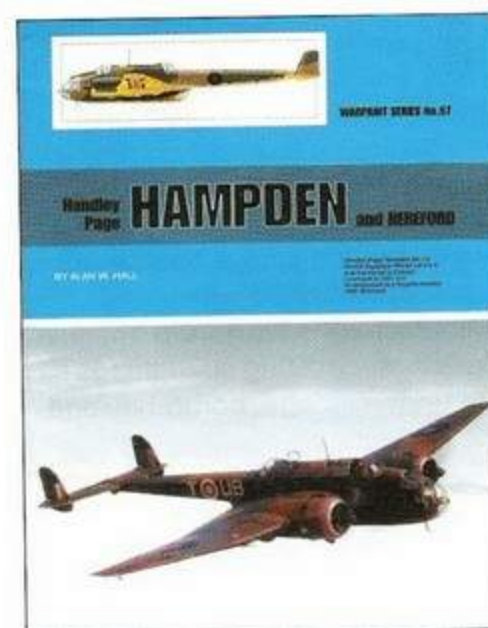
Thanks to Osprey Publishing for the review sample

Handley Page Hampden and Hereford

Number 57 in the excellent Warpaint series, it documents one of the 'forgotten' aeroplanes of the Second World War. Everyone goes on about the Lancaster and the Mosquito but when hostilities started, (as in every other war), we fought with what we had. In action from the first days of the war, with the Wellingtons and Whitleys of Bomber Command, the Hampdens of Nos 44, 49 and 83 Squadrons undertook armed reconnaissance over the North Sea.

This book follows the now familiar format of a brief description and operational history of the aircraft, plus a list of squadrons and units of the types. Aimed primarily at the modeller, it is full of photographs, including two pages dedicated to interior details. One especially useful photo shows to advantage the 'no nonsense' solution to avoiding shooting ones tail off with the rear firing dorsal gun – a metal frame which did not allow the guns to depress far enough for that to happen when moved in line with the tailplanes!

There are the usual 1/72 scale drawings, a colour five-view of a Hampden Mk I of 185 Squadron, plus forty-one colour profiles – not only covering RAF machines but



by Alan Hall
Warpaint Books Ltd
UK price £12

aircraft used by the Canadians, New Zealand, Sweden and the Soviet Union. What more could you want, that is apart from a new state-of-the-art modern technology 1/72 kit!

This is another one for the reference shelf, and again at an affordable price.

Ernie Lee

Thanks to Guideline Publications for the review sample.

Focke Wulf Fw 190 & Ta 152

This Spanish-produced book draws you instantly with its high-quality artwork, ranging through nearly 250 illustrations from the first prototype to the Ta 152 – including two-seaters, and even captured machines in US, British and Russian hands. Some of the schemes, inevitably, are familiar, (as the authors rightly state there is a limit to how many ‘new’ schemes are going to emerge 60 years after the event), but what makes it worth a second look is the discussion about interpretation.

Thanks largely to the wonders of computer graphics the illustrators have been able to show not only what they think it should be, but also illustrate accepted interpretations by others. These options are denoted by a question mark and vary from scrap views showing variations in cowling or spinner colours, to the whole aircraft.

This is an excellent way to both counter the colour-pedants and



by Eduardo Soler & Aurelio Gimeno
Accion Press
UK price £27.99

open a sensible discussion – of this I approve!

On the other hand, five pages are wasted, showing firstly a conventional colour chart with RLM numbers, which is then repeated showing what is meant to be tonal variation in black and white so that you can ‘interpret colours from b&w photos’!

The superb colour illustrations are the main point of the book of course and the text is brief. This is probably just as well as it clearly hasn’t been proofed by someone

who speaks English. Thus it takes a while to work out that the ‘axle housing’ referred to frequently is actually the propeller spinner, and an ‘eject depot’ turns out to be a drop tank! Coupled with some tortured syntax, it gives rise to the odd double-take!

To be fair, the authors have also provided a very thorough, 14pp, bibliography, cross-referenced to the illustrations, which will enable readers to draw their own conclusions.

Boeing F-15I Ra’am in IAF Service

This is Isradecal’s second book in their ‘Aircraft in Detail’ series of current Israeli Air Force fighters, and follows on from their previous publications on the Kfir, Skyhawk and the F-16.

At 82 pages, with colour photographs or artwork on every page, this is a beautifully illustrated reference on the IAF’s version of the versatile F-15E. Only one squadron currently operates the F-15I, and the book covers the type’s IAF/DF history to date, operational deployments and features a full photo gallery, with detailed cockpit and interior photographs. Extensive walk-around details cover all the lumps, bumps and markings that differentiate the F-15I from all the other versions of the Eagle.

As recently as ten years or so ago, there were no detailed books on the IAF and the books that were available, were subject to heavily censored text and photographs. Now we have all the available reference works that we used to dream about, in full colour and in detail that was beyond our imagination then. Believe me, this book misses out nothing, including close-ups of the Raphael AGM-142 ‘Popeye’ and the Python 4 advanced air-to-air missile.

Thanks to the unique access gained by Ra’anán and his colleagues, we now have a readily available reference for the enthusiast and particularly, the model maker. The subject has been extensively researched, with a narrative text in English giving an informative description of the aircraft and its role with No 69 Squadron, ‘The Hammers’ in the IAF. This includes information about serial numbers, squadron markings and camouflage colours, (including profile artwork by Ra’anán himself), including full Federal Standard references. As

This is not just a pretty picture book – there is plenty of inspiration and much food for thought within its immaculately presented covers – and real editors can take heart that SpellCheck hasn’t replaced them... quite yet!

The book is available from most specialist aviation bookshops in the UK.

Mike Verier

Thanks to Historex Agents, Dover, for the review copy. This book is available from all specialist aviation book shops.

Shackleton – Guardian of the Sea Lanes

This 112 page softback caters for both the aviation enthusiast and modeller, and is crammed with information about this old warhorse. The text has a brief description of each variant and its operational history. Lavishly illustrated with both b&w and colour photographs, it is supplemented with some manufacturer’s workshop ‘manual’ drawings, covering such things as the undercarriage, bomb bay and the cockpit.

A brief history of each aircraft can be found in one of the appendices and another is a squadron listing which will help you trace your favourite unit. Yet another details the machines tested by the A&AEE at Boscombe Down.

Lastly there are eight pages of superb colour profiles, thirty-two in all, by our old friend Richard Caruana – covering the type’s long service. All the major variants are illustrated, in a variety of schemes, including a very striking ‘Suez campaign’ MR.2.

Overall this is an excellent monograph. I found one slight ‘glitch’ in the profiles, one of which has its codes transposed, but the correct information can easily be found amongst the photographs and relevant squadron history.

As far as I am aware, there is only one 1/72 scale kit of the Shackleton, originally issued by Frog but

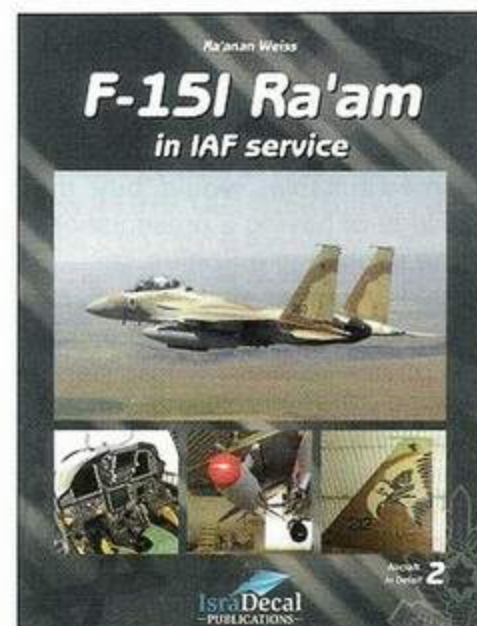


by Richard Franks
Dalrymple & Verdun Publishing
UK price £16.95

now marketed under the Revell label, and of course the new CzechMaster Resin renditions in 1/144 scale. If you have either of these in stock, (plus the Aeroclub conversion set for the 1/72 scale kit), and are intending to make them in the not-too-distant future, you will find this book an essential companion. If you are an armchair historian/aviation enthusiast, then the book is equally essential, as there’s very little else available on the subject! Recommended.

Ernie Lee

Thanks to Dalrymple & Verdun Publishing for the review sample



by Ra’anán Weiss
IsraDecal Publications
UK price £18.99

Ra’anán is also a model maker of some distinction, he understands the modeller’s need for that extra bit of information and detail that makes all the difference.

The F-15I’s four-colour camouflage scheme makes it different to all the other ‘grey’ versions and there are pages of colour photographs amply illustrating the details inside and out and for the modeller. Scale drawings are provided in both 1/72 and 1/48 scales, drafted by Willy Peeters, known for his work with Verlinden Publications.

An excellent book, produced with the enthusiast and model maker in mind with some excellent photographs, giving the modeller plenty to work on including all the stores and armament fits. A perfect compliment to Isradecal’s F-15I Decals and Resin Conversion sets, which have been reviewed elsewhere.

Recommended for all those interested in the IAF, modern military aircraft or just the Boeing F-15I – you will want this book!

Ray Ball

Thanks to Isradecal Publications for the review sample.

Spitfire Combinations compiled by Trevor Snowden, Research and Development Engineer, Humbrol/Airfix

SPITFIRE Marks

		Mk I	PR I	Mk II	PR III	PR IV	Mk Vb	Vb Trop	Mk Vc	Vc Trop	Mk VI	Mk VII	Mk VIII	Mk IX	T.9
WING	A														
	B														
	C Single Radiator														
	C Twin Radiators														
	E Twin Radiators														
	PR														
	20 Series														
WING SPAN	Standard														
	Clipped														
	Desert Clipped														
	Long									Special					
FUSELAGE	Hi-Back														
	Low Back													Few	
MERLIN ENGINE	Single Stage														
	Twin Stage														
GRIFFON ENGINE	Single Stage														
	Twin Stage														
EXHAUST STACKS	3 Manifold Rounded														
	3 Manifold Fishtail														
	6 Manifold Fishtail														
	6 Manifold Rounded														
PROPELLERS	2 Blade														
	(Merlin) 3 Blade DH														
	(Blunt Spinner) 3 Blade Rotol														
	(Pointed Spinner) 3 Blade Rotol														
	4 Blade														
	(Griffon) 4 Blade														
	5 Blade														
TAILPLANES	Early														
	Late														
	20 Series														
RUDDER	Rounded														
	Pointed														
	Broad Chord														
	Spitful														
FILTER	Short														
	Enlarged														
	Vokes														
	Aboukir Type 1														
	Aboukir Type 2														
	AeroVee Merlin														
	AeroVee Griffon														
	FR 47														
WINDSCREEN	Un-Armoured														
	External Armoured														
	Internal Armoured														
	Curved PR														
	Curved Seafire														
CANOPY	Flat														
	Blown														
	PR														
	Low Back														
CHIN COWLING	Standard														
	Aboukir														
	Deep PR														
TAIL WHEEL	Fixed														
	Retractable														
CABIN	Pressure Intake														
WHEELS	5 Indent														
	4 Indent														
	3 Indent														
	Plain Disc														
OIL COOLER	D Shape														
	Circular														
Broad Cannon Blister 'C' Wing															
ARRESTER HOOK	'A' Frame Sting														

[illegible]





The Giant of the Skies

Antonov An-124 Ruslan

The Antonov An-124 was the largest production aircraft in the world right up until the nineties. It was developed as a strategic long-range military transport for the Soviet armed forces. Since its first flight on 26th December 1982, the An-124 has set a whole series of new payload records. It has a maximum take-off weight of 405 tonnes with a payload of 150 tonnes. Noteworthy design features are the nose, which hinges upwards, and the large rear loading doors to enable simultaneous loading and unloading. The landing gear with 24 wheels also enables it to land at air-strips with poor surfaces. In

addition to the gigantic hold, the upper deck of the An-124 can seat 88 passengers. Aeroflot, the Soviet airline, also received a whole range of An-124's for the civil transport of heavy goods, although its primary role was for transporting military payloads. More recently chartered An-124's have made the headlines when used for humanitarian missions.

For more detailed information on this fantastic 1:144 scale model as well as the complete range of Revell model kits, Die Cast and Slot Cars log on to www.revell.de



04346 1:72 Mig 21 F-13



04350 1:72 Hawker Hunter F-6



04585 1:48 F/A 18-E Super Hornet



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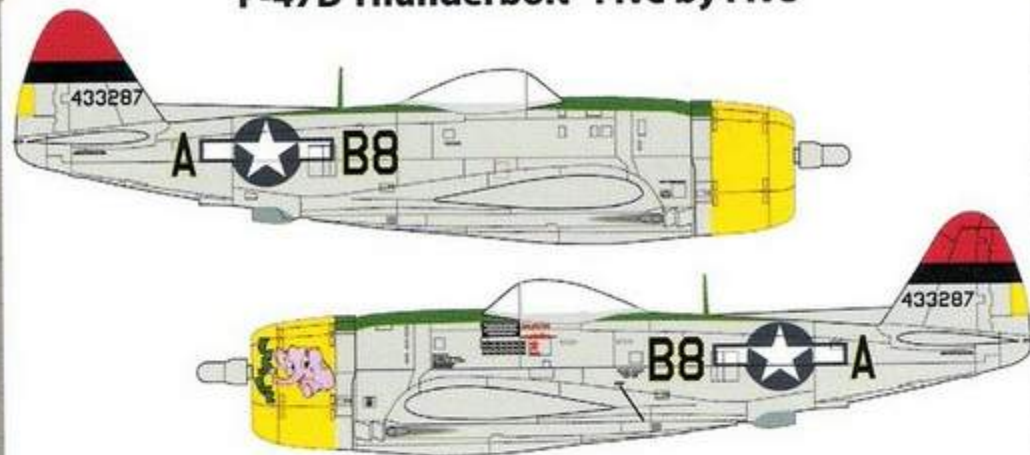
Available from **MODELZONE** and all good model stockists. © Revell and Monogram are registered trademarks of Revell-Monogram I.L.C.

Revell GmbH & Co. KG, 64-66 Queensway, Hemel Hempstead, Herts HP2 5HA. Tel: 01442 250130. Fax: 01442 245619. Email: ukbranch@revell.de Trade enquiries welcome.

WARBIRDS

New Releases

P-47D Thunderbolt "Five by Five"



P-47D Thunderbolt, 362nd FG, B8-A "Five by Five" ~ Col. Joseph L. Laughlin
Scale 1:72. P/N DR50210

FM-2 Wildcat "Mah Baby"



FM-2 Wildcat "Mah Baby", White B6 VC-10 by General Motors, USS Gambier Bay, October 1944 ~ Lt. Bruce Allen McGraw. Scale 1:72. P/N DR50189

Me262A-1a "Yellow 3", May 1945



Me262A-1a

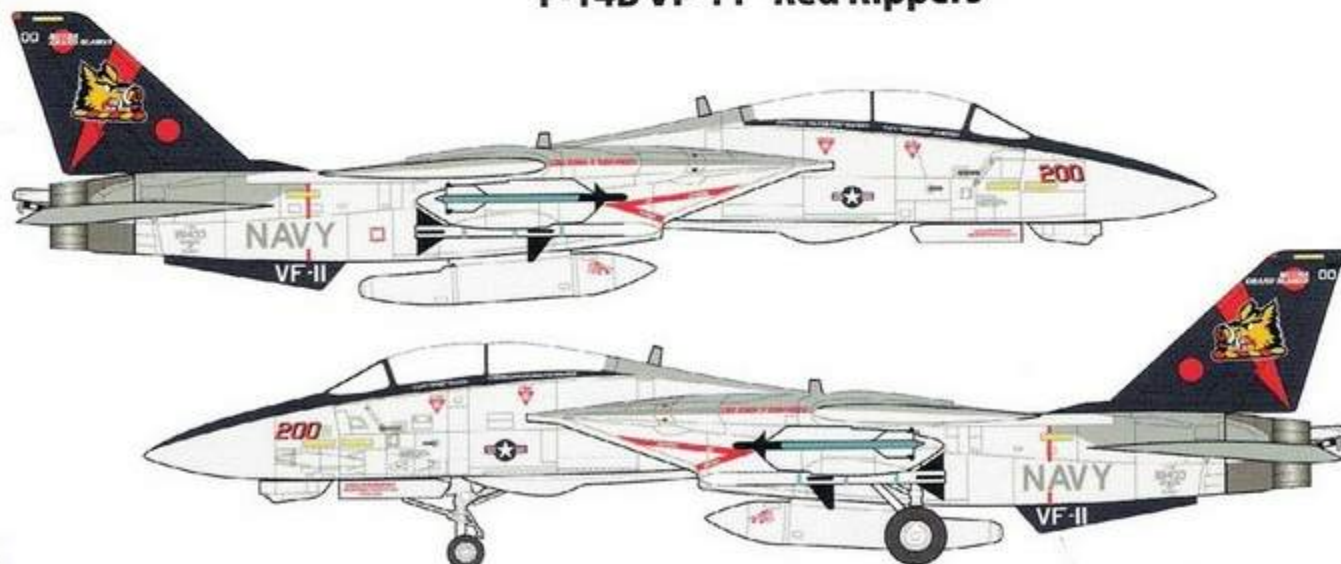
This fully finished and pre-painted model has a distinctive and authentically rendered camouflage paint scheme, and represents "Yellow 3".

Main features include:

- 1/72 Authentic Scale
- High Quality Diecast Metal
- Historically Accurate
- Removable Weapons
- Detailed Cockpits
- Opening/Closed Canopy option (Two canopies included!)
- Pre-assembled
- Display In Flight or In Landing Mode
- Approximate Dims: 5.79"L x 6.83"W x 2.1"H

Scale 1:72. P/N DR50182

F-14B VF-11 "Red Rippers"



Dragon's first F-14B model features the VF-11 Red Rippers serving aboard the carrier USS John F Kennedy. This scale model fighter is superbly detailed, with accurate dimensions and finely moulded components. Its payload includes not only AIM-9L missiles, but also AIM-7s, making this a truly formidable piece of military hardware. This model aircraft features a wild boar caricature on the tail, and is resplendent in the colorful markings of VF-11. Scale 1:72. P/N DR50207

SMALL IN SCALEBIG ON DETAIL

Dragon 1:72 Warbirds: This series includes high quality diecast models of modern and historical military aircraft. All items are true to scale, they include detailed markings, have removable weapons, detailed cockpits, moving wing flaps and even opening canopies.



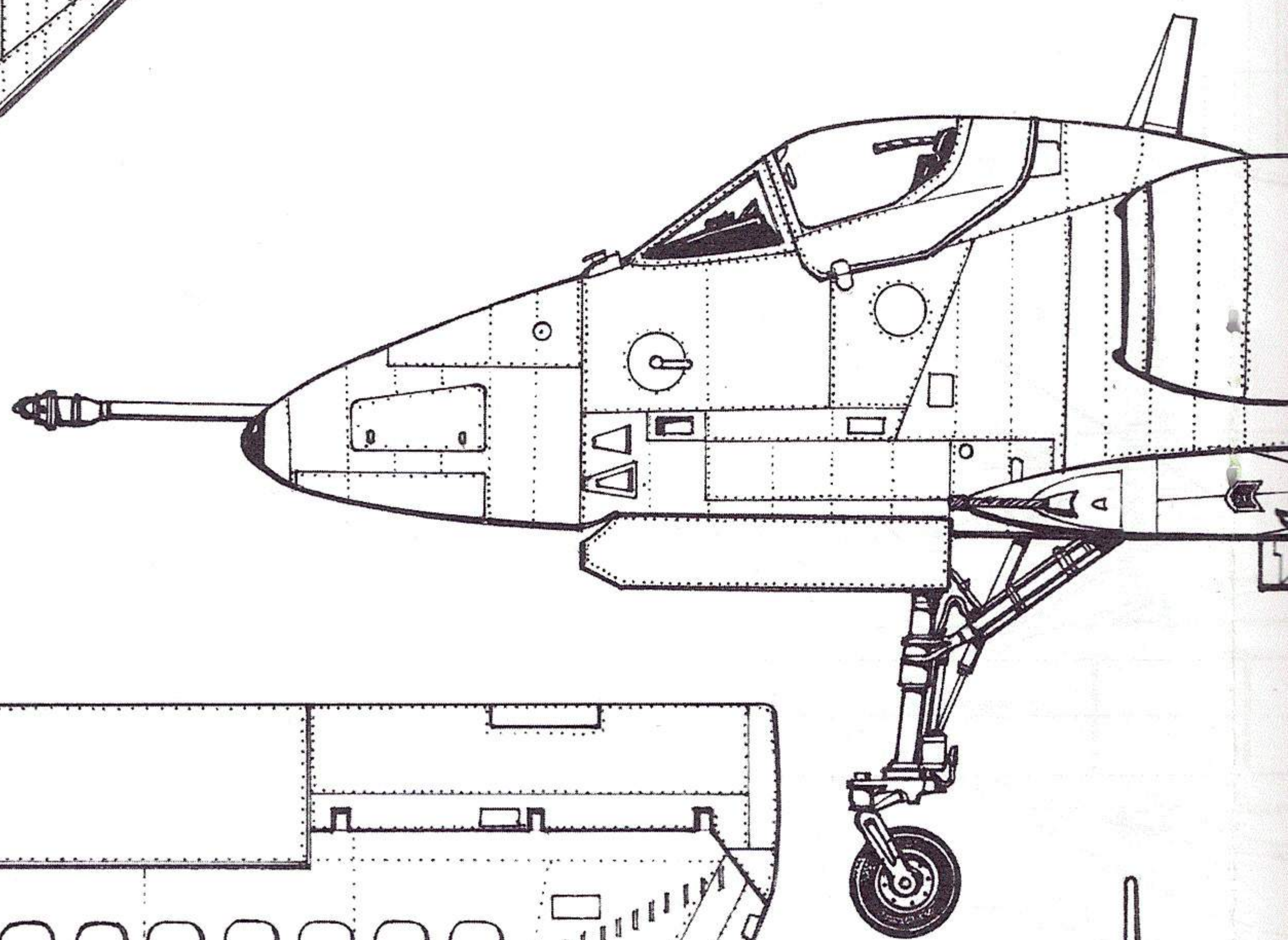
www.dragon-models.com



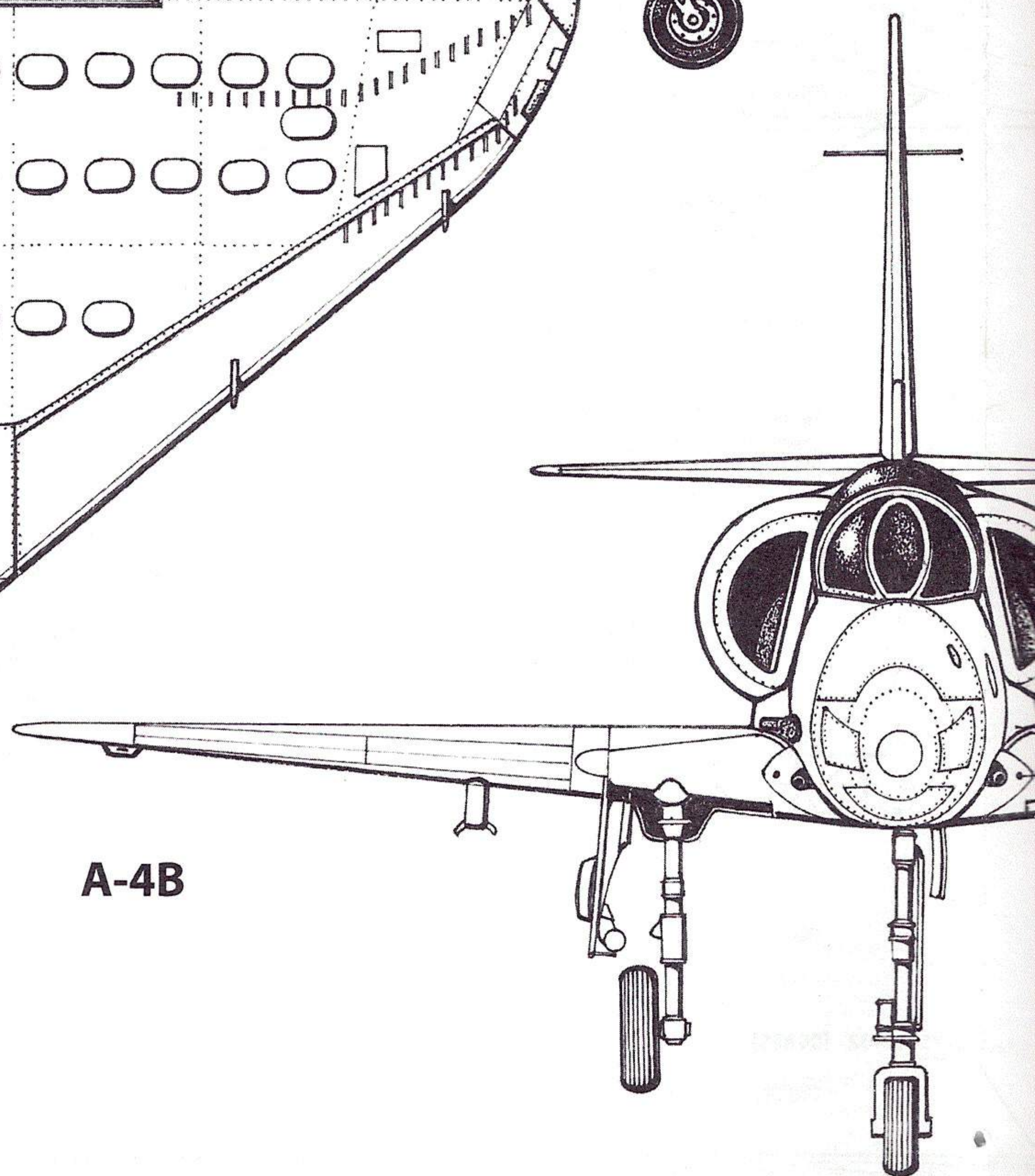
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Lancing • West Sussex • BN15 8TA
Tel 01903 765496
Fax 01903 753643

For more details contact your favourite model shop or visit www.amerang-group.com

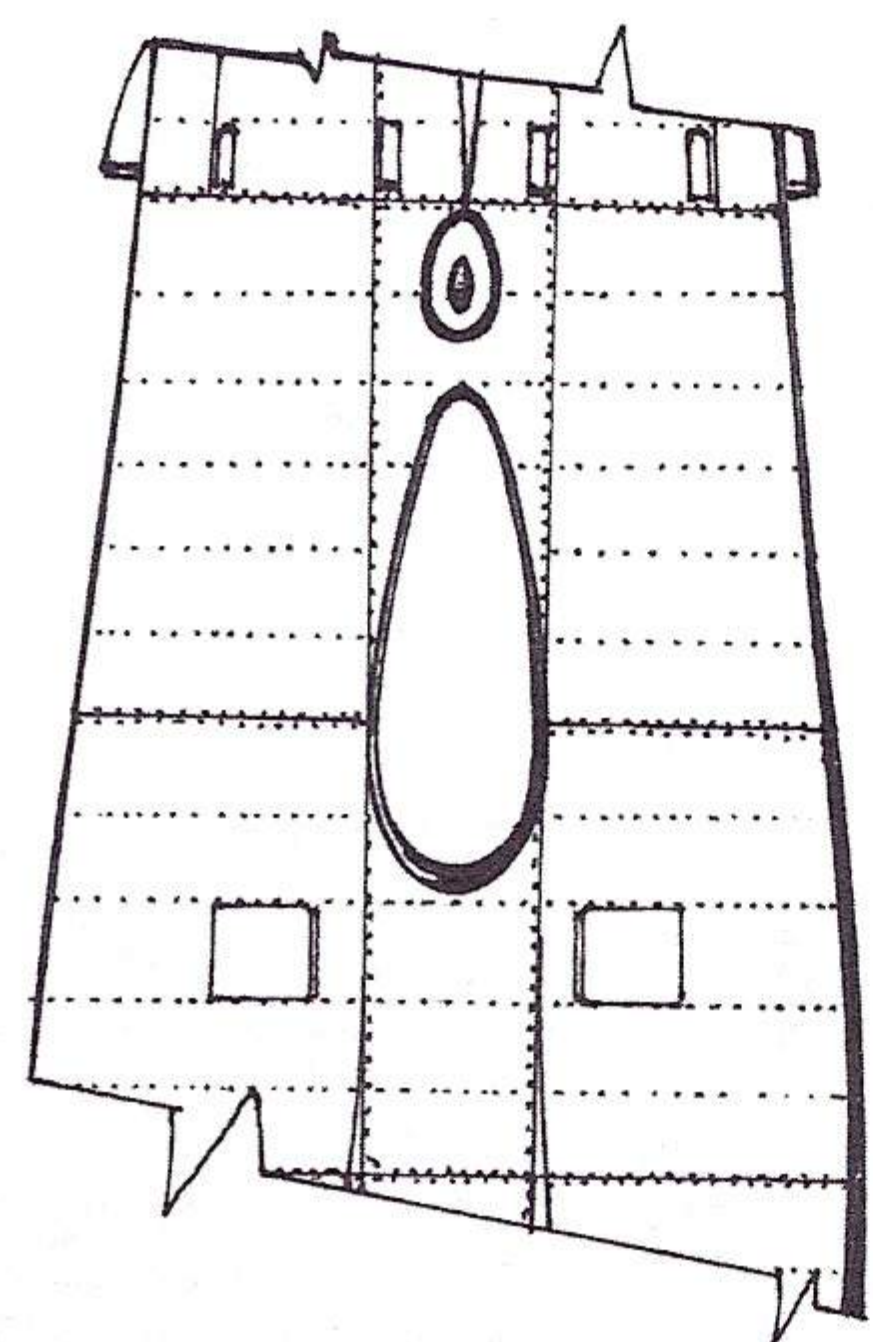
Douglas A-4B Skyhawk



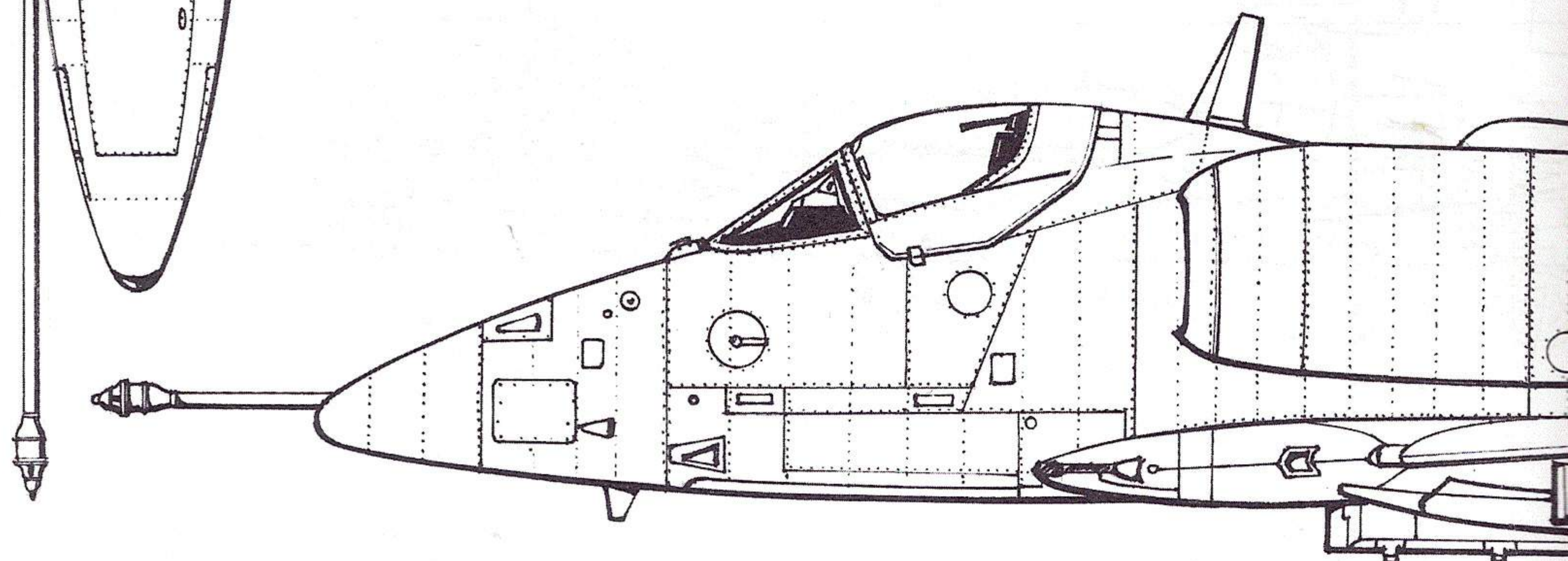
A-4B

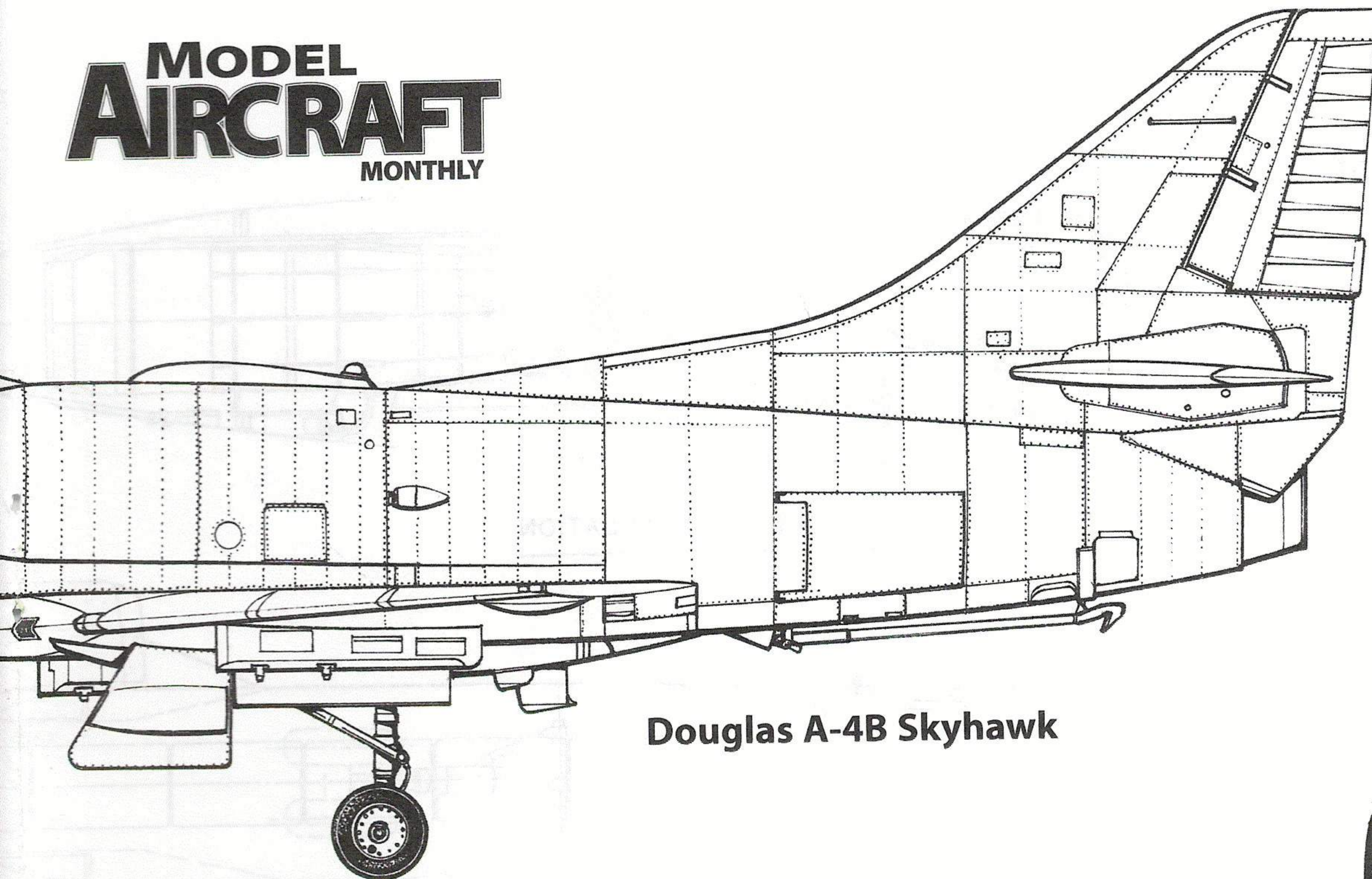


A-4C Avionics Pack



See MAM December 2005,
Volume 4 Issue 12,
for in-depth feature on
Argentinean 'Scooters'



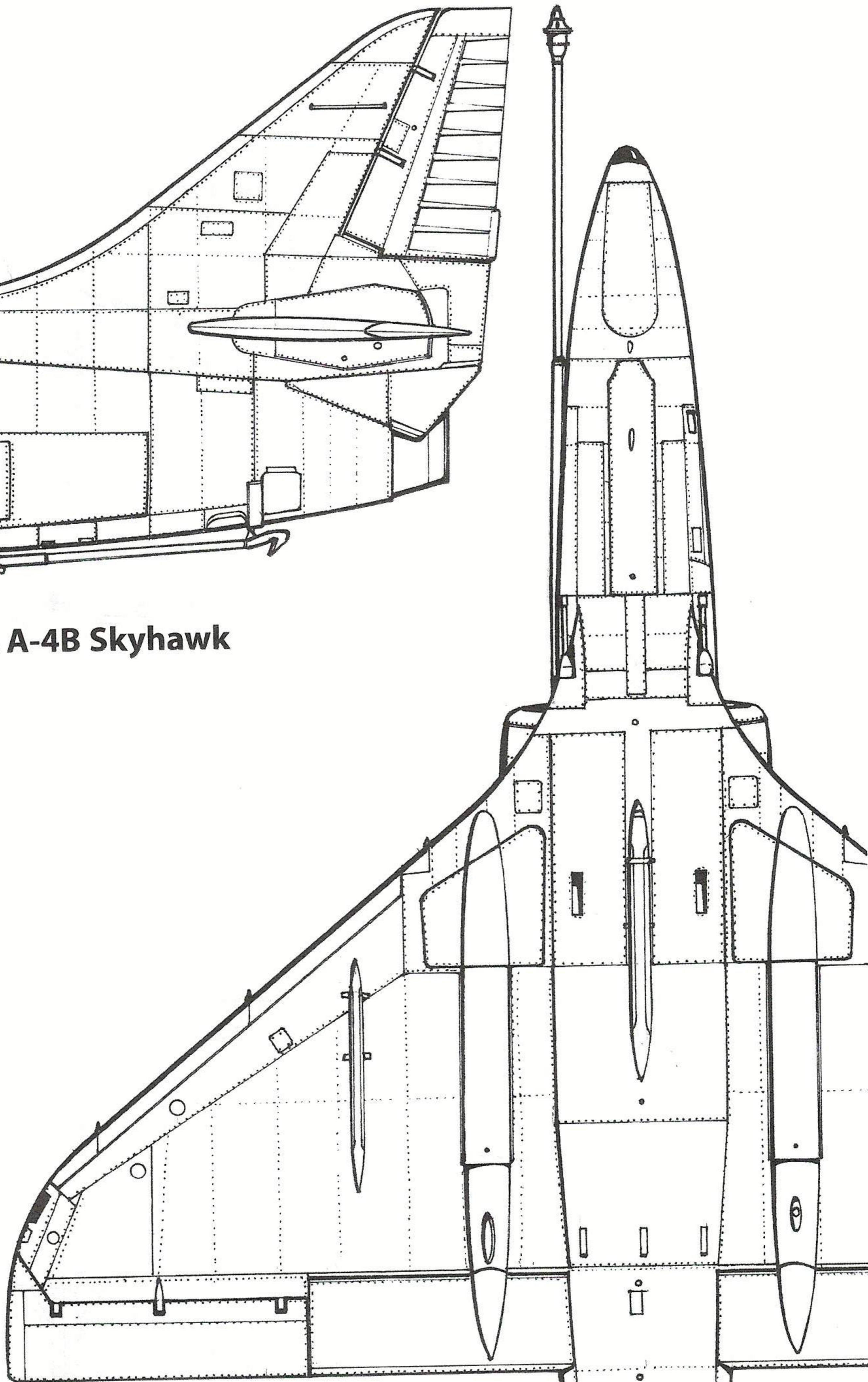
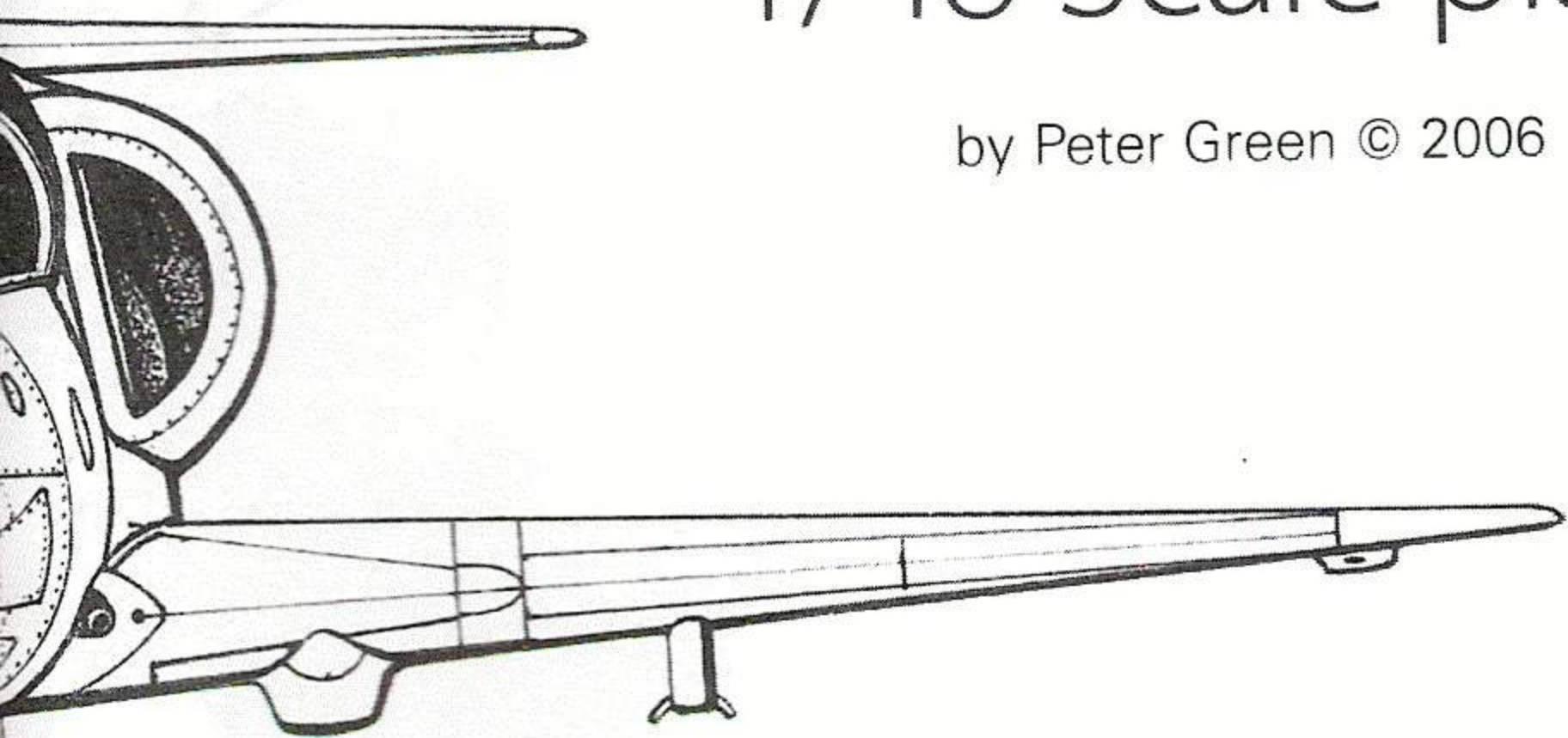


Douglas A-4B Skyhawk

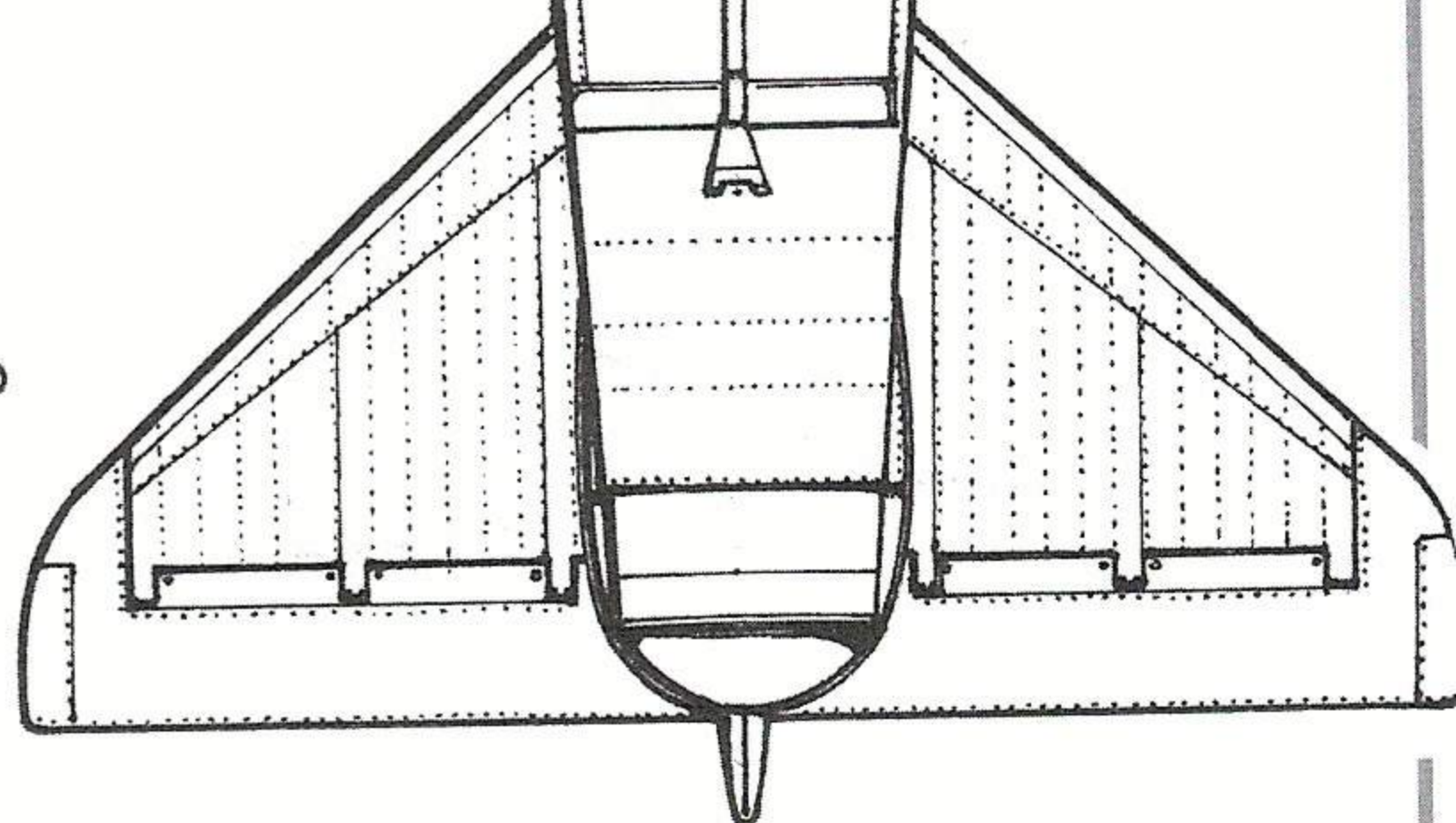
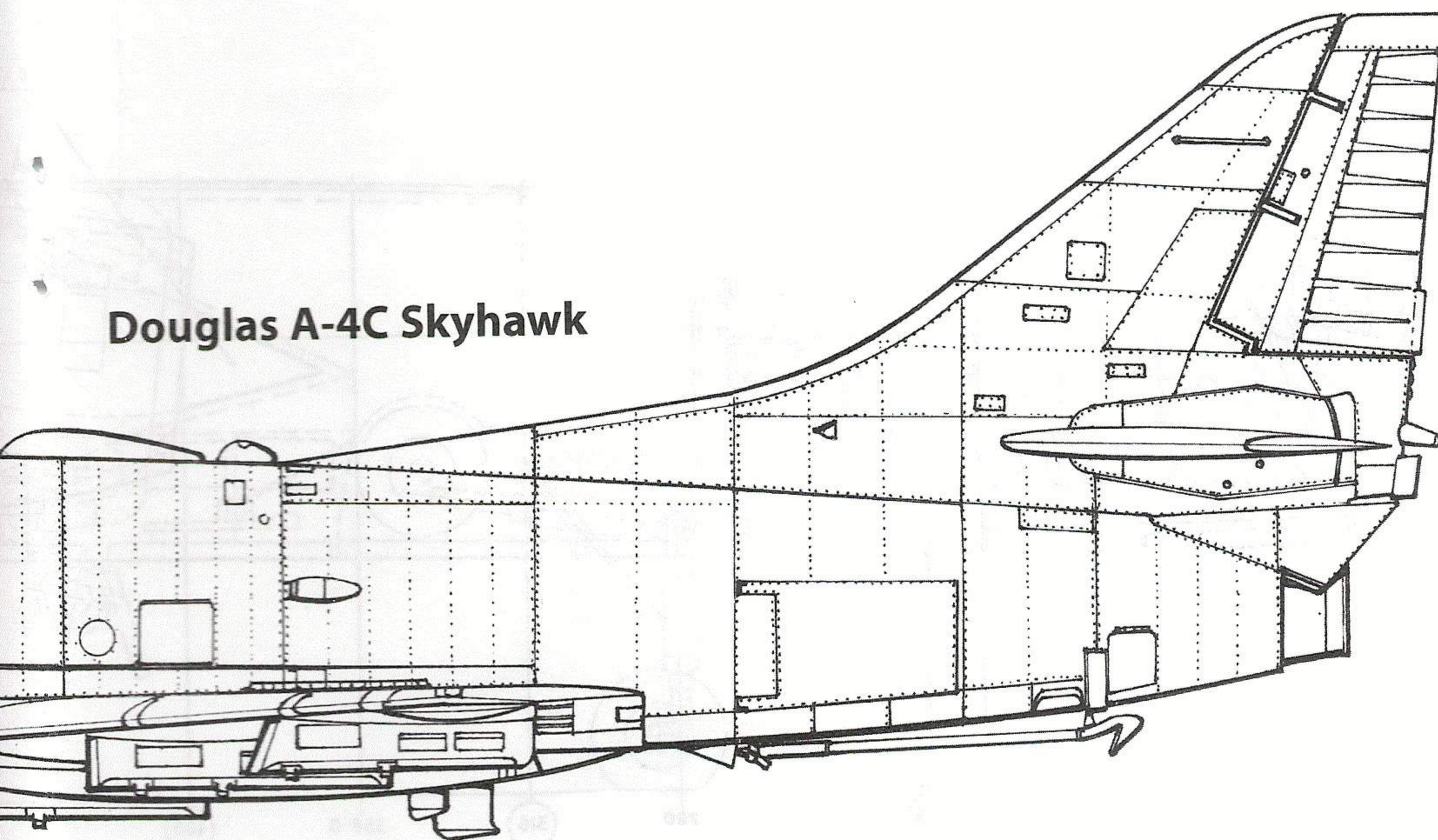
Argentinean A-4 Skyhawk

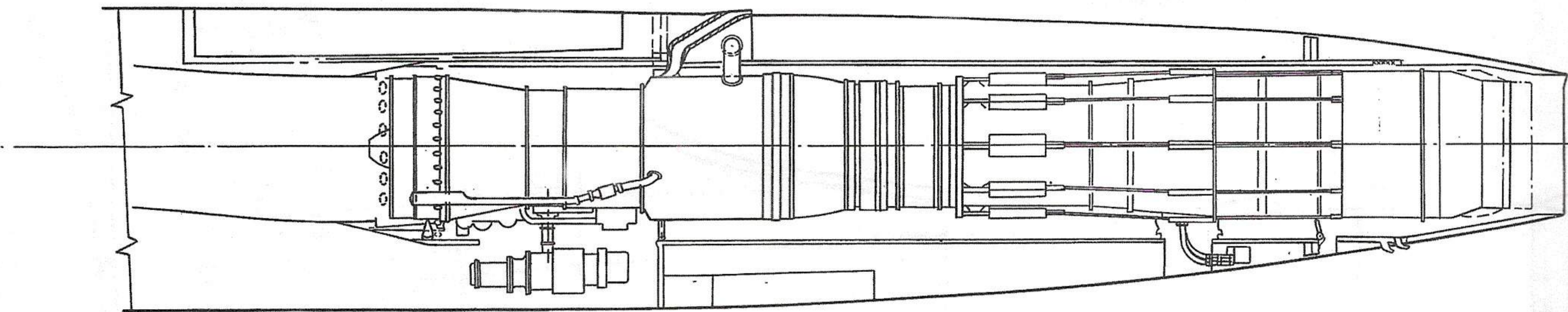
1/48 Scale plans

by Peter Green © 2006

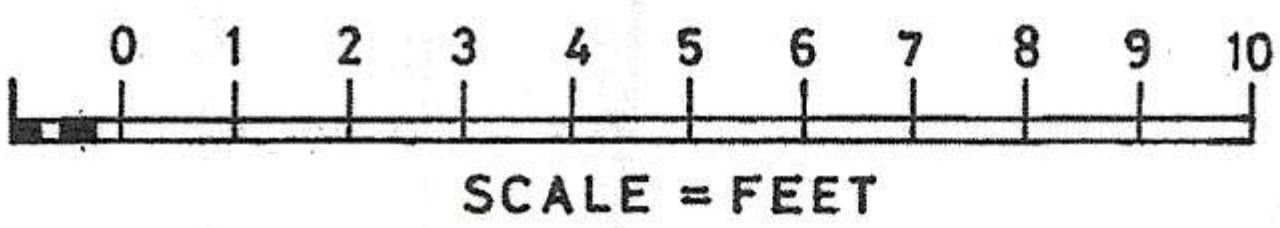
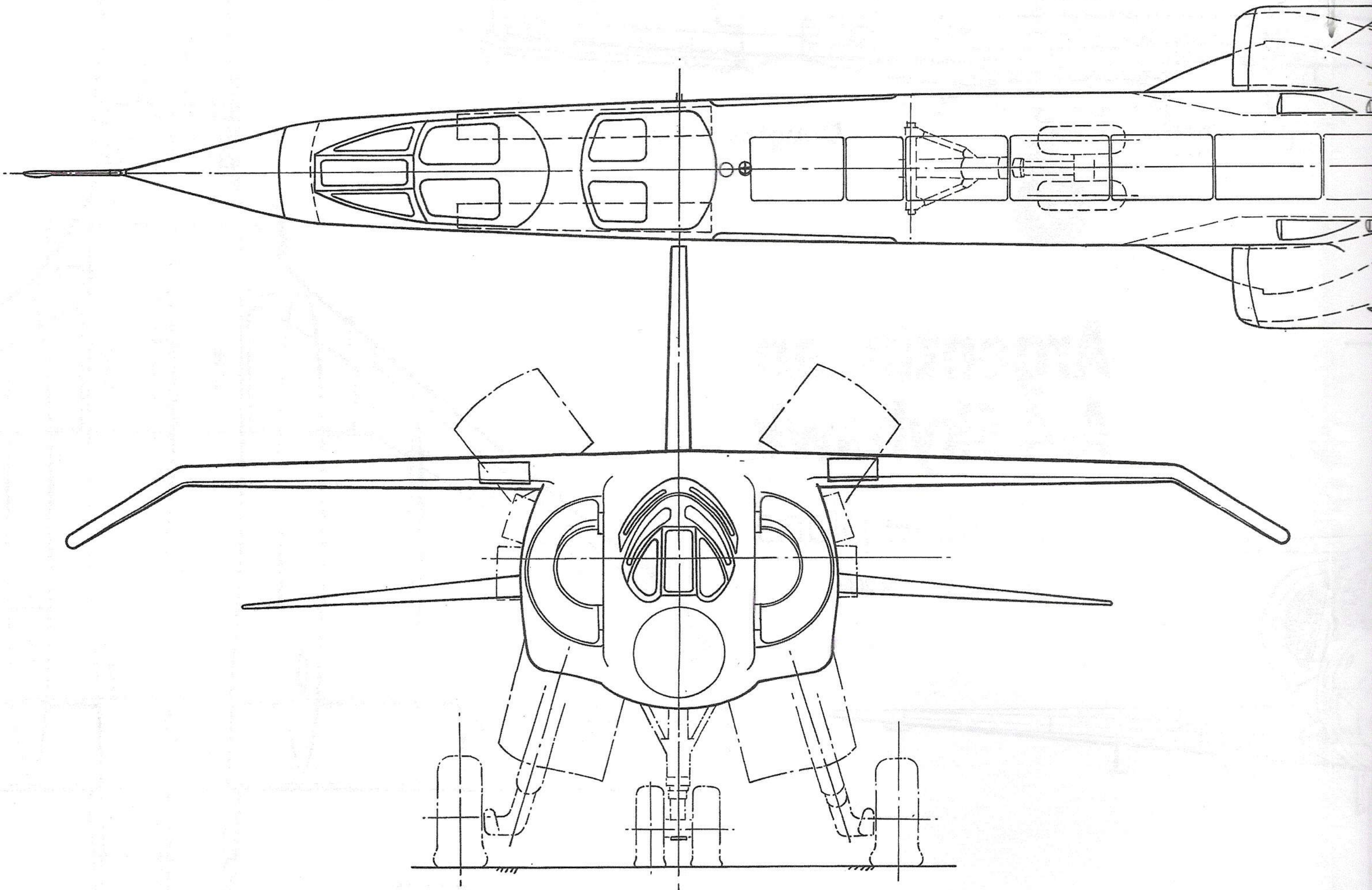


Douglas A-4C Skyhawk

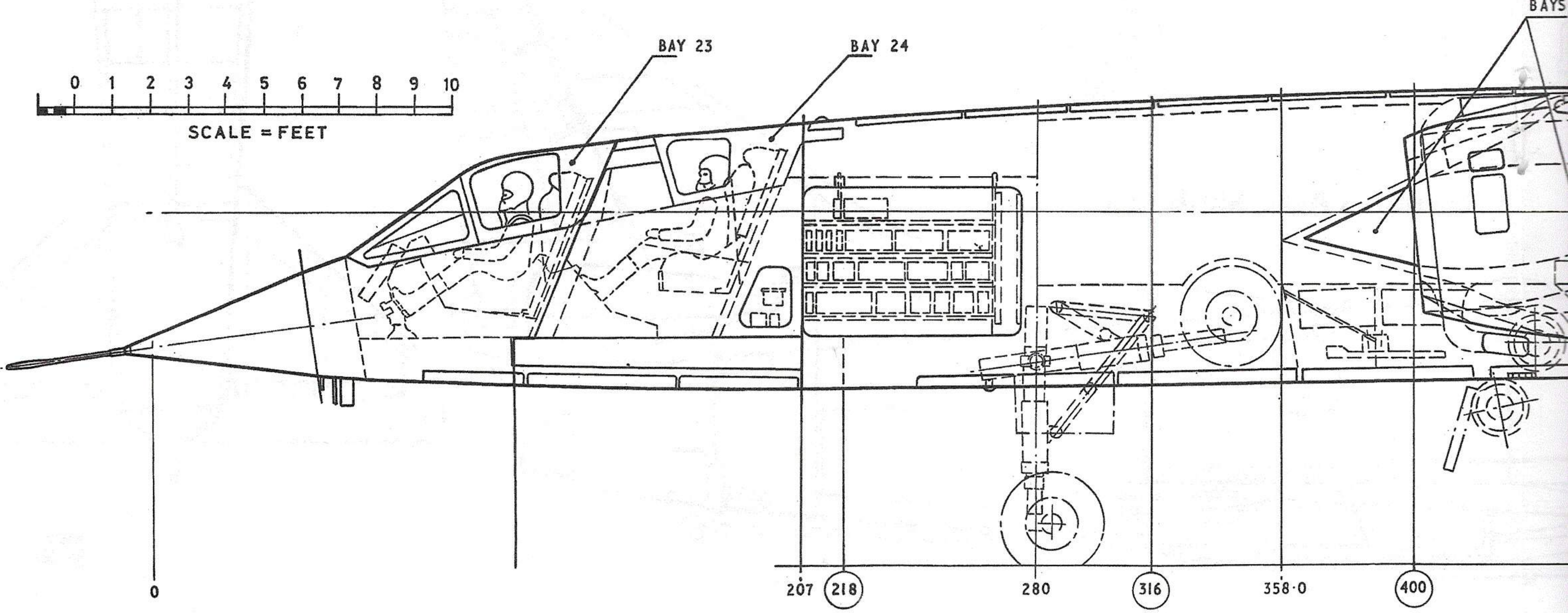


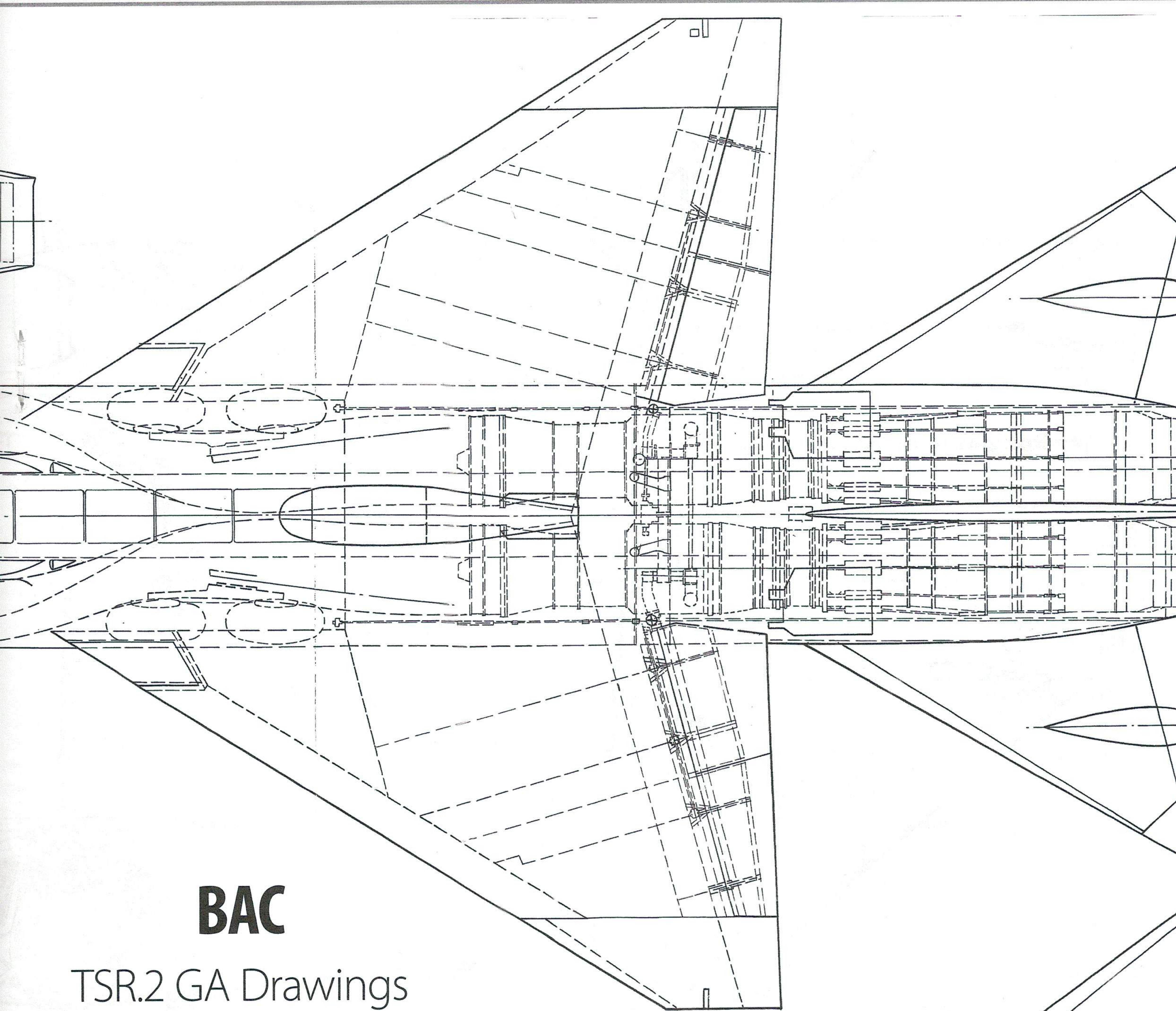


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SCALE = FEET

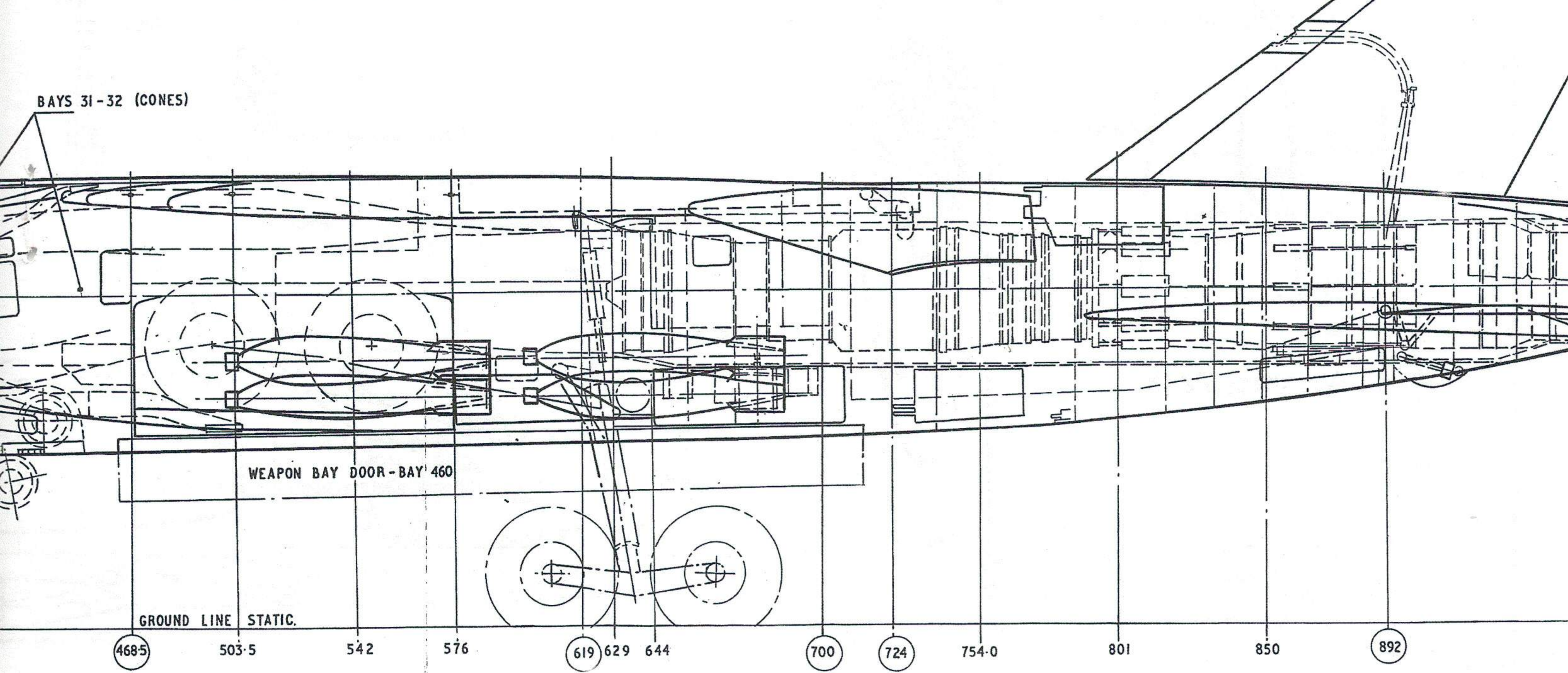


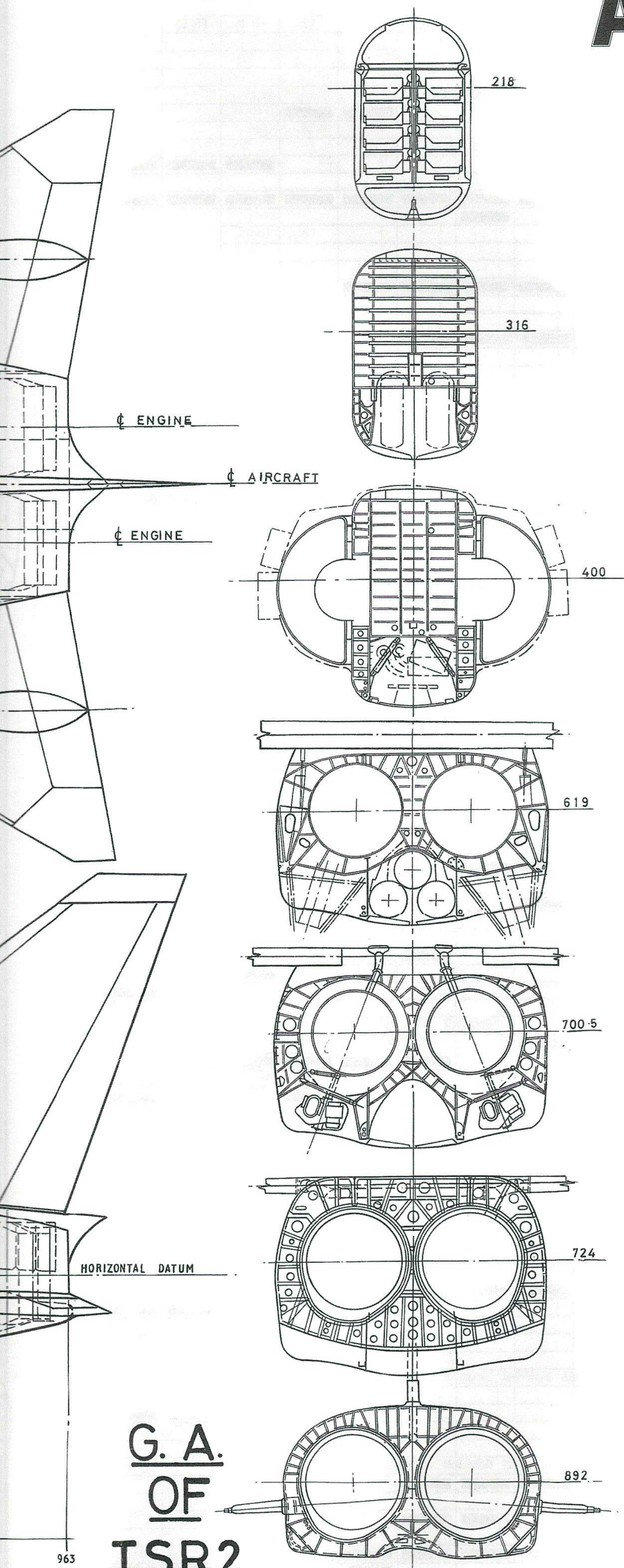


BAC

TSR.2 GA Drawings

© BAC (circa 1964)





**G. A.
OF
TSR2**

XR219 ready to taxi out for its maiden flight on 27 September 1964 (Credit: BAE Systems NW Heritage Group via Danny Barbour)



TSR2A009: XR220 during ground testing at Boscombe Down in early 1965 (Credit: BAE Systems NW Heritage Group via Danny Barbour)

